




KEY WEST INTERNATIONAL AIRPORT

Master Plan Update

PREPARED FOR Monroe County, Florida

September 2019

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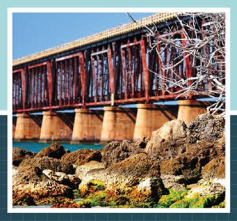
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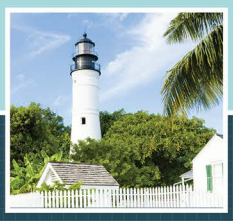
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KEY WEST INTERNATIONAL AIRPORT

Airport Master Plan Update

2015-2035

Executive Summary

September 2019

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INTRODUCTION

Key West International Airport (EYW or the Airport) is the southernmost airport in the state of Florida and in the continental United States. EYW is located 160 miles southwest of Miami via State Road A1A and serves as the primary commercial service airport for the Florida Keys

Originally operating as a military base during World War II, Monroe County (the County) purchased the Airport in 1953 and later constructed the first passenger terminal. The facility plays a vital role in providing tourist access to Key West and several other Florida Keys.

The Airport's Master Plan Update (MPU) presents a framework for the development of EYW to meet the long-term air transportation needs for the Florida Keys. This summary highlights key elements of the plan's recommended development program; it is designed for stakeholders to gain an overview of the major issues addressed in the detailed MPU. While the Master Plan is a visionary document that sets out a 'road map' for the sustainable growth of the Airport, it is not an approval for any specific development or project. In addition, time frames for the projects shown in the plan are flexible and demand driven. The County will periodically update the plan to verify its compatibility with aviation industry and local development trends.



KEY WEST INTERNATIONAL AIRPORT LOCATION

THE MASTER PLAN PROCESS

The objective of the master planning process is to allow orderly development utilizing the framework of local, regional, and national economic as well as transport plans, while protecting the environment. The master planning process typically defines the airport facilities need and when development will be needed.

The Federal Aviation Administration (FAA) recommends airport master plans to be updated every five (5) years, or as necessary, to keep current. EYW's last master plan update was published in 2003. Since that study, growth and development have occurred, not only in the Key West community but also in the aviation industry. Some of the changes that have occurred at the Airport include: the operations of larger aircraft, including narrowbody jets, such as Boeing 737; a significant increase in passenger demand; the completion of a two-level passenger terminal; the installation of an Engineered Materials Arresting System (EMAS) on both runway ends; the construction of an automobile parking garage; and the acquisition of additional property.

This MPU was prepared under the direction of the Monroe County Department of Airports, with input and assistance from representatives of the airlines, U.S. Customs and Border Protection (CBP), Air Traffic Control, the fixed-base operators (FBOs), the FAA, the Florida Department of Transportation (FDOT), and the Monroe County Board of County Commissioners.



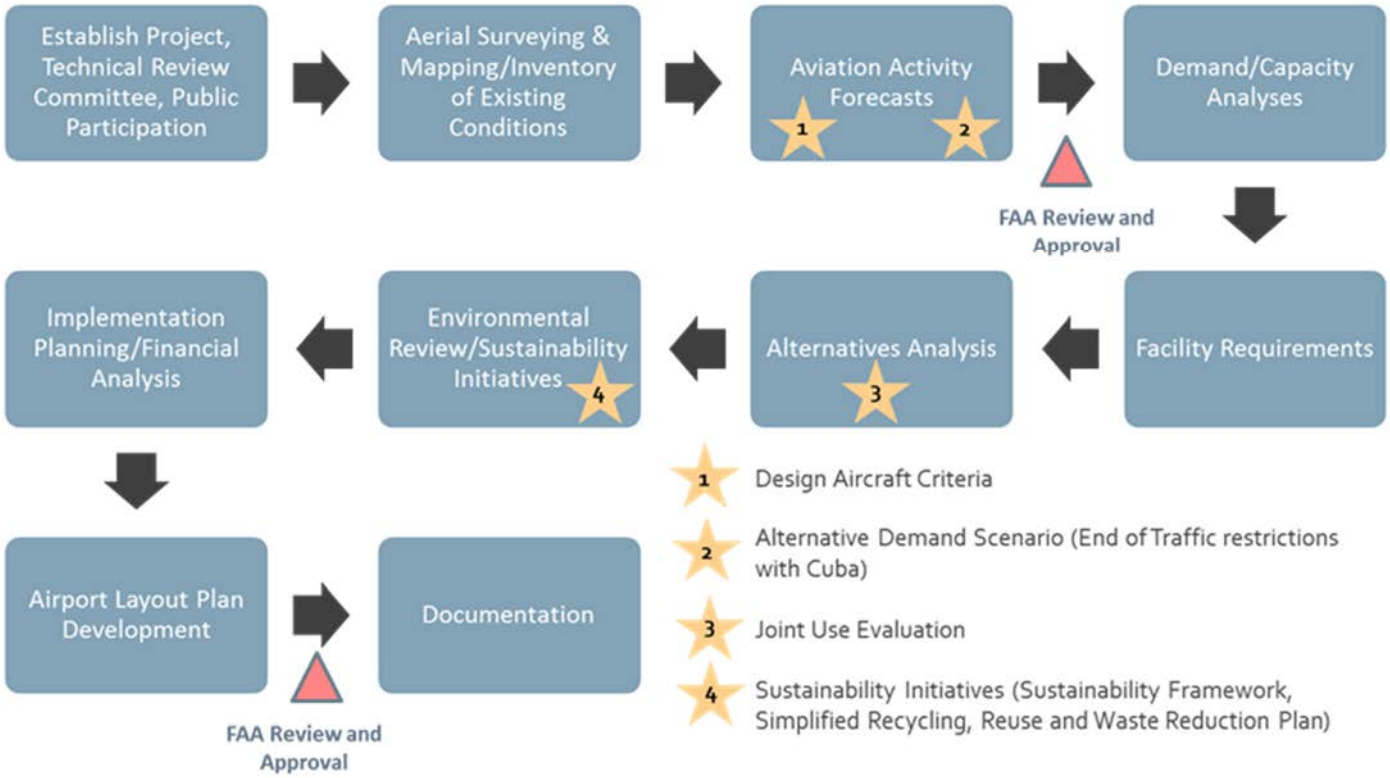
THE MASTER PLAN PROCESS *continued*

The MPU updates the 2003 study to reflect new facilities, current forecasts of Airport activity, and new environmental and other regulatory constraints, and it also plans for an appropriate mix of land uses to support projected aviation and non-aviation needs.

The MPU was conducted in accordance with FAA Advisory Circular (AC) 150/5070-6B, Airport Master Plans, and the FDOT's Guidebook for Airport Master Planning. The MPU also relied on guidance from other relevant FAA ACs and Orders, publications from the Airport Cooperative Research Program (ACRP), Transportation Security Administration (TSA) regulations, and other aviation industry publications. It outlines a plan for the provision of future facilities to accommodate the forecast passenger and aircraft demand. This plan also ensures short-term actions and recommendations do not preclude long-range planning options.

The MPU process commenced in February 2016, and the aviation activity forecasts were completed in July 2016 and approved by the FAA in August 2016. The final technical analysis for the MPU was completed in June/July 2018. After stakeholder review, the final technical report and an Airport Layout Plan (ALP) drawing were presented to the Monroe County Department of Airports in August 2018. In addition, through the duration of the study, three (3) public meetings took place in November 2016, January 2018, and June 2018.

THE MASTER PLAN PROCESS





FUTURE AVIATION DEMAND

Forecasts through 2035 were developed and approved by the FAA for enplaned passengers, aircraft operations, and aircraft fleet mix. These forecasts and projections provide the basis for determining facility requirements and for performing the financial and other analyses necessary to update the Airport's Master Plan.

The forecasts, prepared in 2016, utilize calendar year 2015 as the base year, which is the latest year for which complete passenger data is available. While 2015 serves as the forecast base year, to most accurately represent the current state of the Airport at the time of the MPU's preparation, airline schedule data from 2016 is considered.

The aviation activity forecasts are based on assumptions about aviation activity in the Key West market area, as well as based on other factors that may affect future aviation demand at the Airport, including:

- National economy and trends
- Airline industry trends including mergers and acquisitions
- Operational capacity of the national airspace system
- Competing airports

Actual activity levels may vary from the forecast due to unforeseen events or changes in the operational characteristics of the Airport or economic or political uncertainties. In addition to the baseline forecasts, alternative forecast scenarios are developed to account for potential changes in air service patterns during the planning period (2015 through 2035). This included scenarios that accounted for the introduction of new nonstop service and potential recession events.

Enplanement Passenger Forecast

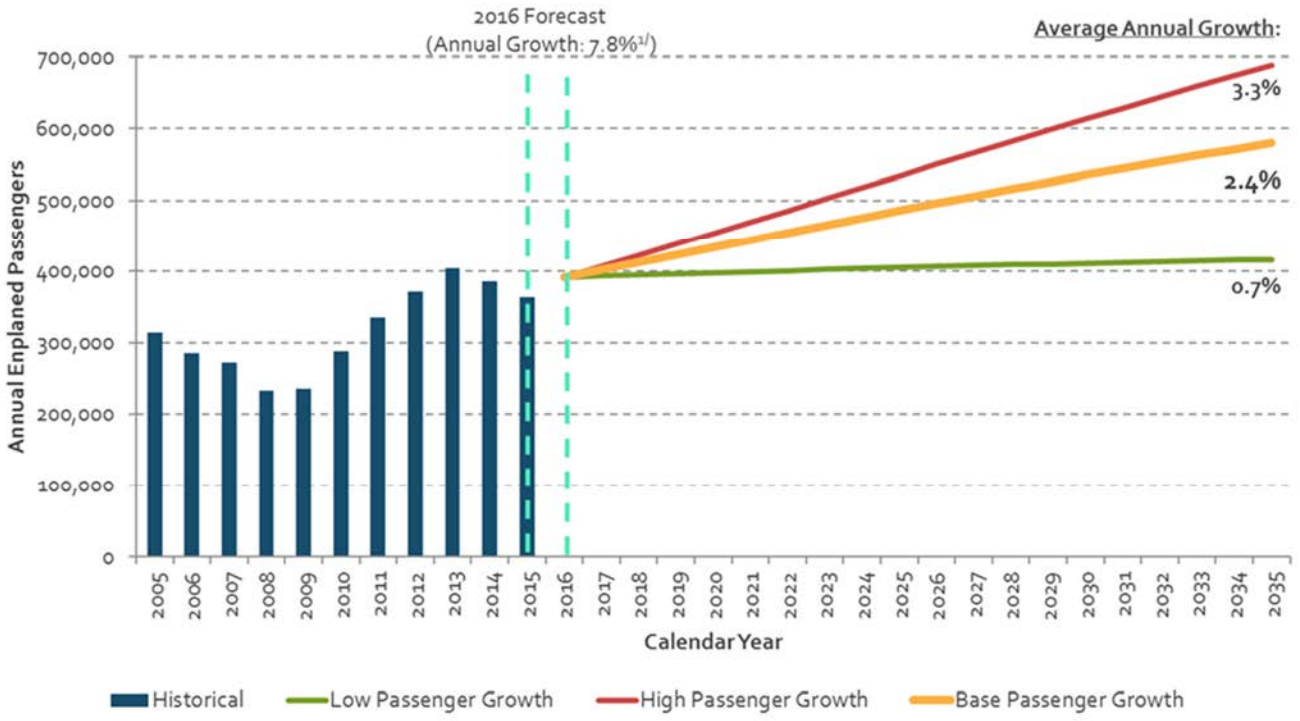
Throughout the last decade, EYW has been characterized by a fragmented market share, with nonstop air service provided to the hub airports of the various airlines serving the Airport and to several regional markets. Traffic at EYW is largely origin and destination (O&D), and it primarily consists of visiting or nonresident passengers.

It is expected that over the forecast period, EYW will continue to operate primarily as an O&D airport and that passenger demand growth will be accommodated by airline seat capacity and frequency growth mainly to and from existing nonstop destinations. Demand growth is expected to materialize because of socioeconomic demand-related market forces, both in top destination markets from the Airport and in the broader United States.

The forecasting analyses provided multiple growth scenarios based on market share and regression methodologies, which are traditional forecasting models used in aviation planning. From these various growth scenarios, a preferred or "base" enplaned passenger forecast was selected and used for further analysis.

For the period from 2015 to 2035, enplaned passengers were forecast to increase at a Compounded Annual Grow Rate (CAGR) of 2.4% to reach 580,474 in 2035.

EMPLANED PASSENAGER (ANNUAL)



Note: 1/ Scheduled departing seats are expected to increase 6.8% in 2016 from 2015, mostly on carriers with high historic load factors. Total scheduled departing seats in 2016 are expected to be near 2013 levels, when the Airport had its most enplaned passengers.

SOURCES: U.S. DOT T-100, March 2016; FAA 2015 TAF, March 2016; Ricondo & Associates, Inc., March 2016 (analysis).

PREPARED BY: Ricondo & Associates, Inc., June 2016.

Aircraft Operations Forecast

Operations across all aircraft categories are forecast to grow by 1.3% over the forecast period, through 2035. Growth is more heavily weighted in the shorter term, primarily due to passenger airline operations growth as airlines are expected to accommodate growing demand in that period through higher frequency of service. Later in the forecast period, passenger airline operations are expected to grow at a slower rate, mostly due to the use of larger aircraft.

Air carrier or passenger airline operations are forecast to increase from 18,651 in 2015 to 24,498 in 2035. This increase results in a CAGR of 1.4%. As passenger demand increases, it is expected that airlines will add flights on larger aircraft to hub destinations. Overall, the forecast proportion of operations on small or medium narrowbody aircraft with 101 to 150 seats is expected to be approximately 26.0% in 2035, up from approximately 14.0% in 2015. Similar to the short- and medium-term periods, average load factors are forecast to remain constant between 77.5% and 78.0%, as airlines are not expected to add capacity beyond the demand in the market.

PASSENGER AIRLINE OPERATIONS (ANNUAL)

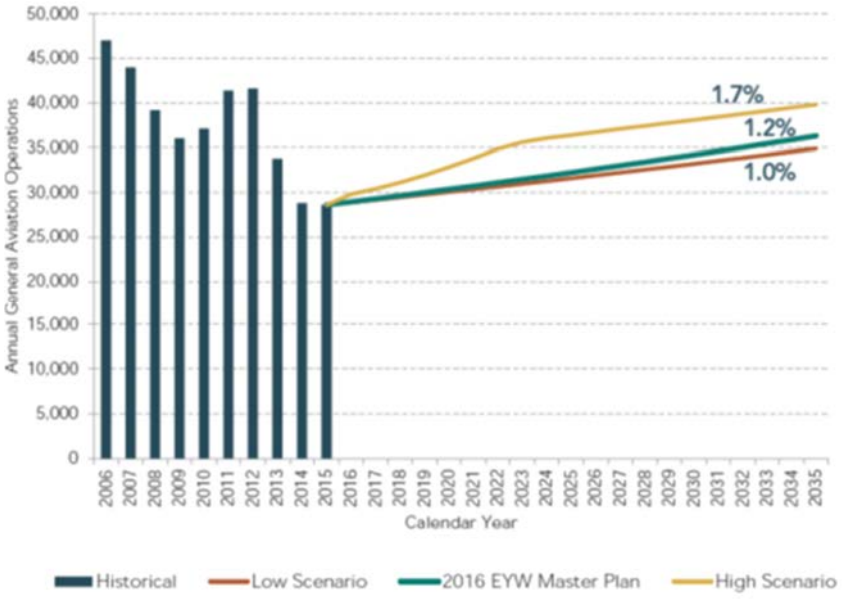


Air taxi operations are forecast to increase from 4,880 in 2015 to 6,693 in 2035, resulting in a 1.6% CAGR.

General aviation (GA) operations are forecast to increase from 28,612 in 2015 to 36,321 in 2035, resulting in a 1.2% CAGR.

Annual all-cargo operations are forecast to grow from 729 in 2015 to 1,247 in 2035, representing a CAGR of 2.7%.

GENERAL AVIATION OPERATIONS (ANNUAL)



SOURCES: U.S. DOT T-100, March 2016; FAA 2015 TAF, March 2016; Ricondo & Associates, Inc., March 2016 (analysis).
PREPARED BY: Ricondo & Associates, Inc., June 2016.

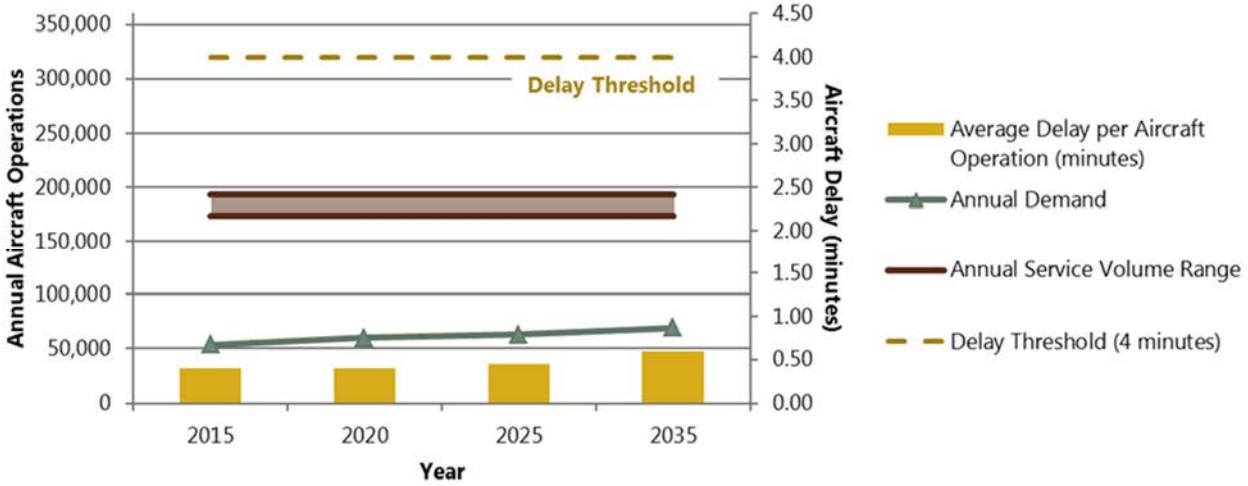
FACILITY REQUIREMENTS

The demand/capacity analysis for the MPU indicated the capacity required in the Airport facilities to meet future demand conditions, which was based on forecast air traffic and other demand characteristics, as well as the extent to which existing facilities need to be expanded or upgraded.

This MPU offers the following set of recommendations for implementation through the 2035 planning horizon and beyond. The recommendations are based on the analyses undertaken through the course of the forecast and the results of Airport stakeholder consultation. The recommendations are separated into five main categories: airfield, passenger terminal, landside, general aviation, and airline/Airport support facilities.

The requirements evaluation of the existing **airfield** showed the existing runway provides sufficient airfield capacity to accommodate the number of forecast operations through the planning horizon, without causing significant aircraft delay. However, several airfield improvements are recommended to comply with FAA design standards. The expansion of the commercial terminal apron and the construction of an overflow aircraft parking ramp are also recommended to accommodate additional aircraft during peak periods and irregular operations.

RELATIONSHIP OF DEMAND, CAPACITY, AND DELAY (BASELINE FORECAST)



Note: 1/Minutes of delay reflects runway component only.
SOURCES: Federal Aviation Administration, Advisory Circular 150/5060-5, Airport Capacity and Delay (Change 2), December 1, 1995; Ricondo & Associates, Inc., August 2016.
PREPARED BY: Ricondo & Associates, Inc., August 2016.

Programmed requirements for **passenger terminal** facilities focused on the number of aircraft gates and the passenger terminal building. A new airside terminal, providing an additional 7,000 square feet of holdroom space, is recommended. This second floor holdroom would support the parking of six jet aircraft near the terminal that can be accessed via passenger boarding bridges. The existing landside building needs to be expanded by a minimum of 1,800 square feet to allow for the expansion of the existing passenger security screening checkpoint. Finally, the existing airside terminal building needs to be expanded to provide additional outbound baggage makeup area for cart staging; to accommodate a new domestic baggage claim device in the western portion of the existing holdroom; and to modernize the rental car customer service area in the Arrivals Hall.

Recommended **landside** improvements include the realignment of Faraldo Circle to allow the roadway to maintain two (2) lanes along its entire length; the construction of a new FBO/GA facility access roadway to provide a direct connection between South Roosevelt Boulevard and the existing FBO automobile parking lot; the relocation of the Greyhound bus stop and associated office; and the rearrangement of the existing vehicle curb to provide additional parking for taxicabs, commercial vehicles, and public buses. Additional public parking capacity will be needed as passenger levels grow. Thus, a new parking facility will be required. Additionally, a consolidated rental car facility is recommended to increase the number of ready lot spaces available and to free up spaces for additional employee and/or passenger parking.

General aviation development will be driven by the long-term need to separate GA operations from large commercial aircraft operations, as well as the desire to develop new facilities. GA facility requirements include the need for additional apron areas, and, possibly, a new expanded FBO terminal.

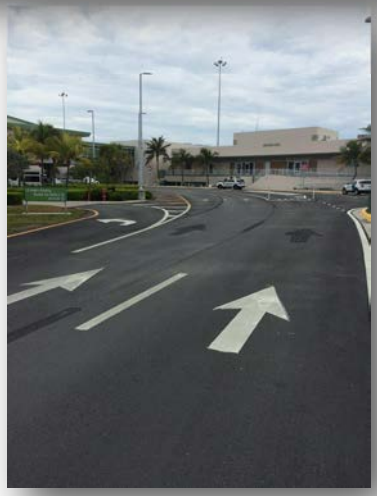
Recommended **airline/airport support facilities** include the construction of a consolidated airport maintenance facility, the demolition of the former NWS balloon facility, the construction of a new security fence along the north boundary of the Airport, the relocation of a service road, and the replacement of the existing airport beacon.

PROPOSED DEVELOPMENT PLAN

One of the goals of the master planning process is to identify the best options available for meeting the future development needs at EYW. Based on the results of the analysis and coordination with the County, Air Traffic Control, the FBOs, and CBP representatives, a recommended Airport development plan was selected.

The recommended development plan for EYW is graphically depicted on Page 10. This development plan provides a vision for the growth and development of the Airport over the next 20 years, and it establishes a framework for the development of EYW facilities. However, it is not an approval for any specific development or project. Actual development may not mirror what is shown on the development plan due to factors such as changing demand, funding availability, or future environmental constraints. The Airport development plan consists of projects in the following categories:





Airfield

Proposed airfield improvements are as follows:

- Taxiway A Rehabilitation, Geometry Improvements, and Lighting: The age of the pavement combined with the increased traffic and aircraft size has resulted in the pavement showing signs of distress and being a potential generator of foreign-object debris on the taxiways. The rehabilitation of the pavement will include a mill and overlay. Improvements to the pavement geometry along Taxiway A are needed to comply with FAA design standards. Geometry improvements include widening the Taxiway A connectors to allow for cockpit-over-centerline taxiing; removing excess pavement at both the Runway 9 and Runway 27 entrances from Taxiway A; and installing a no-taxi island south of Taxiway C to prevent direct access from the apron to the runway. Rehabilitation of the taxiway lighting system includes the replacement of taxiway edge light fixtures, isolation transformers, and circuitry back to the airfield lighting vault.
- Taxiway 'A' Extension: Taxiway A will be extended to the west to provide access to the runway end. A full-length parallel taxiway will provide additional takeoff runway length without back taxiing on the runway.
- Commercial Apron Expansion: Expanding the commercial terminal apron is necessary to accommodate additional aircraft during peak periods and during irregular operations. This apron will also be used to park large GA aircraft that the existing GA apron cannot accommodate. In addition, an expanded terminal apron will allow for aircraft utilizing the existing easternmost apron parking positions, and aircraft utilizing the future designated CBP parking area, to power-in and power-out, rather than utilize an aircraft tug. The commercial apron expansion will also provide additional capacity during the expansion of the terminal.
- Overflow Aircraft Parking Ramp: This project consists of the construction of approximately 29,000 square yards of ramp to provide additional aircraft parking positions. This ramp will be used to park aircraft that cannot be accommodated on the existing apron areas.
- Taxiway D Relocation: This project provides for the relocation of Taxiway D 150 feet west to mitigate the direct access from the apron to the runway (in compliance with FAA AC 150/5300-13A).
- Runway 27 Bypass Taxiway and Safety Improvements: The extension of the runway by 200 feet to the east would allow for the construction of a bypass taxiway to help mitigate potential delay at the Runway 27 end. This project also includes the construction of an Engineered Material Arresting System (EMAS) to provide a level of safety that is generally equivalent to a full RSA built to the dimensional standards in FAA AC 150/5300-13A, Airport Design.





Passenger Terminal

Terminal Expansion and Renovation: A second-floor concourse to the north of the existing terminal facility is proposed. This concourse will accommodate new holdrooms, concession spaces, restrooms, and six boarding bridges, and it will connect the existing landside terminal and the proposed building via the existing departure bridge. The existing terminal will be improved and renovated to meet forecast demand with the addition of a new baggage claim, an expanded baggage makeup area, and the creation of a turboprop holdroom. An 1,800-square-foot extension of the existing passenger processing building will be added at the security screening checkpoint to accommodate a new security checkpoint lane.

Landside

- Terminal Arrivals Curb Modifications: This project consists of improvements to Faraldo Circle to maintain two (2) lanes through the terminal core and to eliminate the existing merge lane. This project also includes modifications of curbsides and landscaping, as well as 1,334 square yards of pavement construction and restriping.
- GA Area Access Road: This project consists of the construction of a new access roadway to the GA area and Airport support facilities directly from South Roosevelt Boulevard. In addition, this project will eliminate two (2) existing access points on S. Roosevelt Boulevard and will provide dedicated access to the existing Department of Motor Vehicles from the newly constructed roadway. This project would eliminate trips on the arrival curbside roadway generated by fuel tankers and waste management trucks, improving safety and security at EYW.
- Bus Station Relocation: This project involves relocating the bus pickup/drop-off currently leased to Greyhound, as well as the associated office at the Airport.
- Rental Car Facilities – Phase 1: This project includes the planning, design, and construction of a consolidated rental car (CONRAC) facility. The location of and concession program for the proposed facilities will be defined as part of the planning phase for this new CONRAC facility.
- Public Parking Lot – Surface Parking (Phase 1): This project consists of the planning, design, and construction of a new public parking lot and/or garage with approximately 150 parking spaces. The location of the proposed public parking facilities will be established once the location of the CONRAC facilities is set.

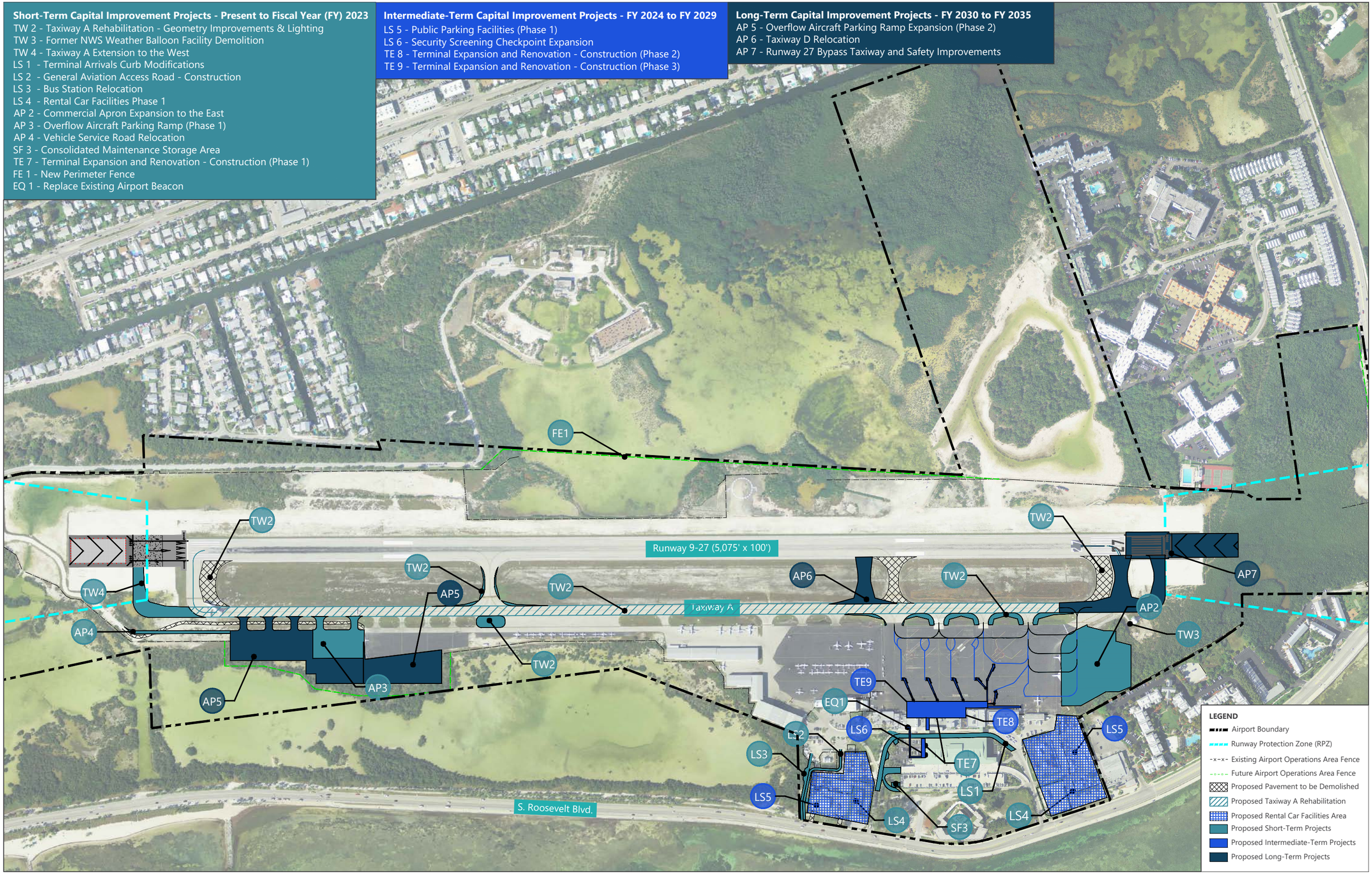
Airline/Airport Support Facilities

- Consolidated Maintenance Building: This project includes the consolidation of all Airport maintenance facilities into one building, which will be constructed as an extension to the west side of the existing employee parking garage. This site will be built above the stormwater retention area to avoid impacts to the retention area.
- Former National Weather Service (NWS) Balloon Facility Demolition: This project includes the demolition of the former NWS Balloon facility which is currently located within the Runway 9-27 Runway Object Free Area (ROFA).
- New Perimeter Fence: The project includes the construction of a new Air Operations Area (AOA) fence along the north Airport boundary (including earthwork and infill of the salt ponds and wetland areas). This project would also include the removal of the existing fence located within the Runway Safety Area (RSA), as well as environmental reviews and approvals.
- Vehicle Service Road Relocation: This project provides for the relocation of the service road located south of Taxiway 'A' and west of the existing GA ramp. Specifically, the service road will be relocated outside of the runway and taxiway object free areas in compliance with FAA airport design standards, as stipulated in Advisory Circular 150/5300-13A.
- Replace Existing Airport Beacon: This project includes the replacement of the existing airfield's rotating beacon, pole, and foundation. The existing beacon has reached the end of its serviceable life and it is not easily maintained. The existing beacon will be replaced with a beacon and pole system to allow for maintenance to occur without the need for the EYW to rent a boom truck.

Short-Term Capital Improvement Projects - Present to Fiscal Year (FY) 2023
TW 2 - Taxiway A Rehabilitation - Geometry Improvements & Lighting
TW 3 - Former NWS Weather Balloon Facility Demolition
TW 4 - Taxiway A Extension to the West
LS 1 - Terminal Arrivals Curb Modifications
LS 2 - General Aviation Access Road - Construction
LS 3 - Bus Station Relocation
LS 4 - Rental Car Facilities Phase 1
AP 2 - Commercial Apron Expansion to the East
AP 3 - Overflow Aircraft Parking Ramp (Phase 1)
AP 4 - Vehicle Service Road Relocation
SF 3 - Consolidated Maintenance Storage Area
TE 7 - Terminal Expansion and Renovation - Construction (Phase 1)
FE 1 - New Perimeter Fence
EQ 1 - Replace Existing Airport Beacon

Intermediate-Term Capital Improvement Projects - FY 2024 to FY 2029
LS 5 - Public Parking Facilities (Phase 1)
LS 6 - Security Screening Checkpoint Expansion
TE 8 - Terminal Expansion and Renovation - Construction (Phase 2)
TE 9 - Terminal Expansion and Renovation - Construction (Phase 3)

Long-Term Capital Improvement Projects - FY 2030 to FY 2035
AP 5 - Overflow Aircraft Parking Ramp Expansion (Phase 2)
AP 6 - Taxiway D Relocation
AP 7 - Runway 27 Bypass Taxiway and Safety Improvements



PROGRAM PHASING

The purpose of each periodic update to an airport's master plan is to assist in the development of 5-year, 10-year, and 20-year capital programs for the Airport. This information is used to work with the FAA and the FDOT to formulate short-range and long-range funding plans. The proposed Capital Improvement Program (CIP) for the Airport include airfield, landside, and other general airport improvements necessary to accommodate forecast aviation activity and to address the County's development goals for EYW.

Actual growth and requirements for the delivery of Airport infrastructure and capacity development are dependent on economic and industry trends, initiatives, and global influences. This is not expected to affect the development strategies presented in this MPU; however, it will affect the timing of investments in elements of the plan. The general order of priority for the implementation of these improvements, based on forecast Airport activity growth, has been divided into three phases:

Short Term - Present to Fiscal Year (FY) 2023

- Taxiway 'A' Rehabilitation, Geometry Improvements, and Lighting – Design and Construction
- Former NWS Weather Balloon Facility Demolition
- Taxiway 'A' Extension – Design, Permitting, and Construction
- Terminal Arrivals Curb Modifications
- General Aviation Access Road – Construction
- Bus Station Relocation
- Rental Car Facilities Phase 1 – Planning and Programming
- Commercial Apron Expansion – Design, Permitting and Construction
- Overflow Aircraft Parking Ramp (Phase 1) – Design, Permitting and Construction
- Vehicle Service Road Relocation
- Consolidated Maintenance Storage Area – Design and Construction
- Terminal Expansion and Renovation – Design and Construction (Phase 1)
- New Perimeter Fence
- Replace Existing Airport Beacon
- Environmental Assessment – Taxiway 'A', Commercial Apron Expansion, Overflow Aircraft Parking Ramp, and Vehicle Service Road Relocation

Intermediate Term - FY 2024 to FY 2029

- Public Parking Facilities (Phase 1) – Design and Construction
- Security Screening Checkpoint Expansion
- Terminal Expansion and Renovation – Construction (Phase 2)
- Terminal Expansion and Renovation – Construction (Phase 3)
- Overflow Aircraft Parking Ramp Expansion Phase 2 – Environmental Assessment and Design
- Airport Master Plan Update

Long Term - FY 2030 to FY 2035

- Overflow Aircraft Parking Ramp Expansion Phase 2 – Construction
- Taxiway D Relocation
- Runway 27 Bypass Taxiway and Safety Improvements

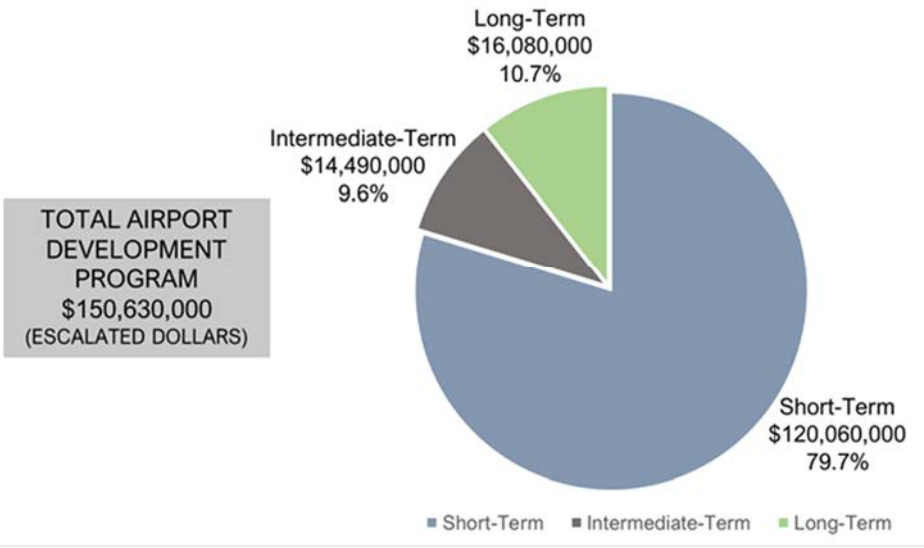
Note: The above lists only include key projects and des not include the Noise Mitigation/Sound Insulation Program.

FINANCIAL PLAN

A financial plan was developed to determine the financial feasibility of implementing the proposed CIP. Separate from the projects recommended in the MPU, the County plans to undertake several additional projects. The proposed MPU projects were combined with projects included in the existing CIP to develop a total long-term CIP from which to assess the financial feasibility of the proposed development plan. The cost of the projects included in the recommended CIP for the Airport totals over $150 million.

The proposed funding strategy for the recommended development plan includes a variety of funding sources. The proposed funding does not include using any local tax dollars. Actual financing strategies used will be determined as implementation approaches.

CAPITAL IMPROVEMENT PROGRAM IMPLEMENTATION COST BREAKDOWN - BY TIMEFRAME



SOURCES: Monroe County Department of Airports, March 2019.
PREPARED BY: Ricondo & Associates, Inc., March 2019.

Federal Grants

The primary source of FAA-related funds is the Airport Improvement Program (AIP). Funds obligated for the AIP are drawn from the Airport and Airway Trust Fund, which is supported by user fees, fuel taxes, and other similar revenue sources. Funds deposited into the Airport and Airway Trust Fund are distributed to eligible airports throughout the United States and its territories through FAA grants under appropriations limits established by Congress.

In general, airport sponsors can use AIP grants for most airfield capital improvements or repairs. AIP grants cannot be used for exclusive-use areas in terminals, revenue-producing areas of terminals, hangars, or non-aviation development. Any professional services that are necessary for eligible projects, such as planning, surveying, and design, are also eligible; however, operating expenses associated with AIP projects are not eligible. Aviation demand at an airport must justify the projects, which must also meet federal environmental and procurement requirements. The FAA distributes grants under the AIP to airport operators in two ways: entitlement grants and discretionary grants. Entitlement grants are distributed based on the number of enplaned passengers served at airports on an annual basis. Discretionary grants are distributed for individual projects based on funding availability and the priority of projects at airports nationwide. Approximately $71.3 million in escalated project costs are expected to utilize funding from the federal entitlement and discretionary programs.

State Grants

The Airport is included in the Joint Automated Capital Improvement Program, a coordinated process between the FAA and the FDOT to plan airport capital improvements and expenditures. If the project receives federal funding, then the FDOT is expected to contribute approximately 5 percent of the funding. The FDOT will provide up to 80 percent of the funding for most non-FAA-supported airport development projects; however, only 50 percent funding is provided if the project is directly related to economic development. Approximately $7.2 million in escalated project costs are expected to receive state funding.

Passenger Facility Charges (PFC) Revenues

Passenger Facility Charges (PFC) revenues may be used on a "Pay-As-You-Go" (PAYGO) basis or leveraged to pay debt service on bonds or other debt used to pay for PFC-eligible projects. Because airport sponsors may use PFC revenues for the local matching share of AIP grants, PFCs can help airport sponsors implement AIP-financed projects sooner than they would be able to otherwise. PFCs may be used for any AIP-eligible project; although, PFC eligibility is generally broader than AIP eligibility. A total of approximately $6.2 million of future CIP projects were assumed to be funded on a PAYGO basis. In addition, PFC revenues were assumed to be used to pay debt service on bonds for certain PFC-eligible projects.

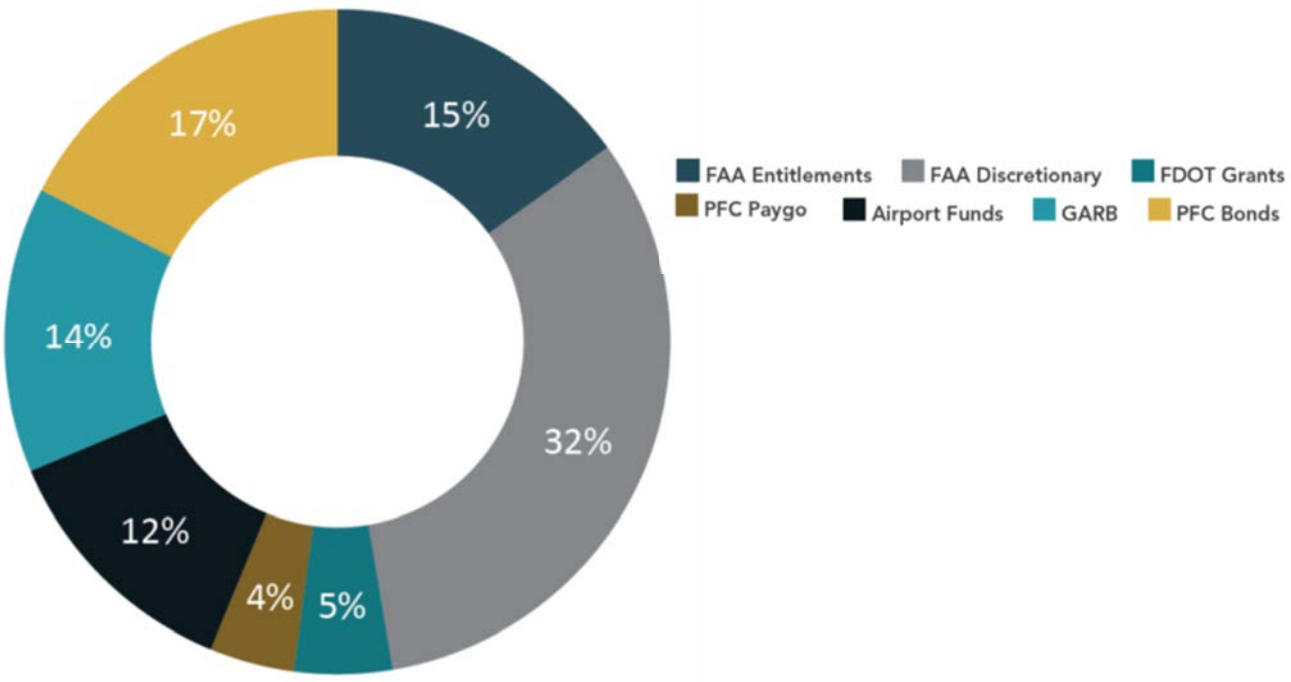
Revenue Bond Proceeds

Proceeds from the issuance of General Airport Revenue Bonds (GARBs) and PFC Bonds can be used to fund projects included in the CIP. Future GARB and PFC debt service associated with the CIP projects are estimated based on industry standards over a bond term of 30 years. Approximately $21.0 million of CIP project costs are assumed to be funded with GARBs, and approximately $26.3 million of CIP project costs are assumed to be funded with PFC Bonds.

Sponsor Funding / Local Share

The net remaining amount of funding required for the CIP will be derived from the County's revenues or other sources. The County's revenues are typically generated through user fees charged for the facilities and the services provided. These user fees are typically established by Airport management based on market conditions in the area. Approximately $18.7 million in escalated project costs are expected to be funded with local funds.

CAPITAL IMPROVEMENT PROGRAM FUNDING SOURCES



Notes: 1. Total does not add up to 100% due to rounding.
2. FAA-Federal Aviation Administration, FDOT-Florida Department of Transportation, and PFC-Passenger Facility Charge
SOURCES: Monroe County Department of Airports, March 2019.
PREPARED BY: Ricondo & Associates, Inc., March 2019.

ENVIRONMENTAL OVERVIEW

A general overview of the potential environmental consequences and environmental review requirements associated with the CIP projects recommended as part of the preferred development plan for the Airport was conducted as part of the MPU. Potential impacts associated with such development projects typically include consideration of areas exposed to significant levels of aircraft noise, as well as areas where the ground would be disturbed due to the development of the projects themselves.

Based on the recommended development plan for the Airport, the following potential environmental impacts have been preliminarily identified. Prior to project implementation, the potential environmental effects of these projects will need to be reviewed in accordance with National Environmental Protection Agency (NEPA) requirements and implementing guidance in FAA Orders 1050.1F, Environmental Impacts: Policies and Procedures, and 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions, or the latest versions of those Orders at the time of environmental processing.

A project is considered ready for NEPA evaluation when the construction is expected to be initiated within a few years (i.e., construction should begin within 3 years of the FAA's issuance of a finding). The level of environmental documentation required for a proposed action depends on the type of project(s), the potential environmental effects of the project(s), and the types of environmental resources that could be affected.

POTENTIAL ENVIRONMENTAL IMPACTS

RESOURCE CATEGORY	POTENTIAL IMPACT
Water Resources	
Wild and Scenic Rivers	Not Applicable
Wetlands	Construction projects with potential impacts include the Taxiway A extension, the Runway 9 south and west apron expansions, the hangar expansion, the bus station relocations, the public parking expansion, the commercial ramp expansion, and the new runway exists. National Environmental Protection Agency (NEPA) evaluation and coordination with U.S. Fish and Wildlife Service (USFWS) recommended.
Surface Water Quality	Coordination may be necessary with the City of Key West and the Federal Department of Environmental Protection to ensure water quality standards are not affected by future Airport development.
Floodplains	The entire Airport is referred to as inundated by 100-year flood zones "AE and "VE" with velocity hazard (wave action).
Department of Transportation Act, Section 4(f)	None
Farmlands	Not Applicable
Air Quality	Temporary impacts related to construction. Necessary permits should be obtained, and Best Management Practices should be implemented.
Historical, Architectural, Archeological Resources, and Cultural Resources	None
Biotic Resources (including fish, wildlife, and plants)	Activities that involve federal permitting must determine if a proposed action under its purview would affect a federally listed species or habitat critical to the species.
Hazardous Materials, Solid Waste, and Pollution Prevention	Increased solid waste will be generated during construction. Landfills are located outside of Monroe County; however, Best Management Practices would reduce the potential release of hazardous materials.
Construction Impacts	Construction traffic, noise, air pollution, and water pollution would be temporary and required to be evaluated as part of NEPA analysis.
Socioeconomic Impacts	None
Noise and Compatible Land Use	An increased area would be affected by the day-night average sound level (DNL) 65 A-weighted decibels (dBA) noise contour due to a modest increase in operational activity.

Chapter 2

Inventory of Existing Conditions

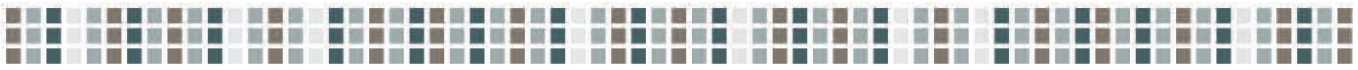


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2. Inventory of Existing Conditions

This inventory chapter provides background data on the existing facilities at Key West International Airport (EYW or the Airport). Developing an inventory of the physical, operational, and functional characteristics of EYW is the basis for identifying improvements to Airport elements for inclusion in the Master Plan Update. The data and information presented in this chapter of the Master Plan Update were collected through on-site visits and interviews, or documented within existing studies, reports, design drawings, and other Airport records.

The inventory is organized under the following section headings:

- Airport Setting
- Airfield System
- Passenger Terminal Facilities
- On-Airport Curbsides and Roadways
- Automobile Parking
- Air Cargo Facilities
- General Aviation Facilities
- Airport/Airline Support Facilities
- Other Facilities
- On- and Off-Airport Land Uses
- Inventory of Lease Documents
- Environmental Settings
- Existing Utility Infrastructure

2.1 Airport Setting

2.1.1 AIRPORT HISTORY

Key West International Airport (EYW or the Airport) is the southernmost airport in the state of Florida and the continental United States. The Airport is 160 miles southwest of Miami via State Road (SR) A1A and is the primary commercial service airport for the Florida Keys. **Exhibit 2-1** depicts the general location and vicinity of EYW. The city of Key West is the closest point in the United States to Cuba and is located 3 miles west of Naval Air Station (NAS) Key West - Boca Chica Field.

The Airport is owned by Monroe County (the County), and operated by the Board of County Commissioners under a separate County enterprise fund. The Director of Airports reports to the Board and manages the day-to-day operations of both EYW and Florida Keys Marathon Airport (MTH).

International air service was first offered by Aeromarine West Indies Airways between Key West and Havana, Cuba in 1920. However, the Airport did not officially open until 1927 as Meacham Field. It was a military base during World War II and until it was purchased by Monroe County in 1952; it was renamed Key West International Airport in 1957. The first passenger terminal at the Airport was constructed in 1957 and, since that time, the County has continued to make airside and landside improvements to serve the traveling public[1].

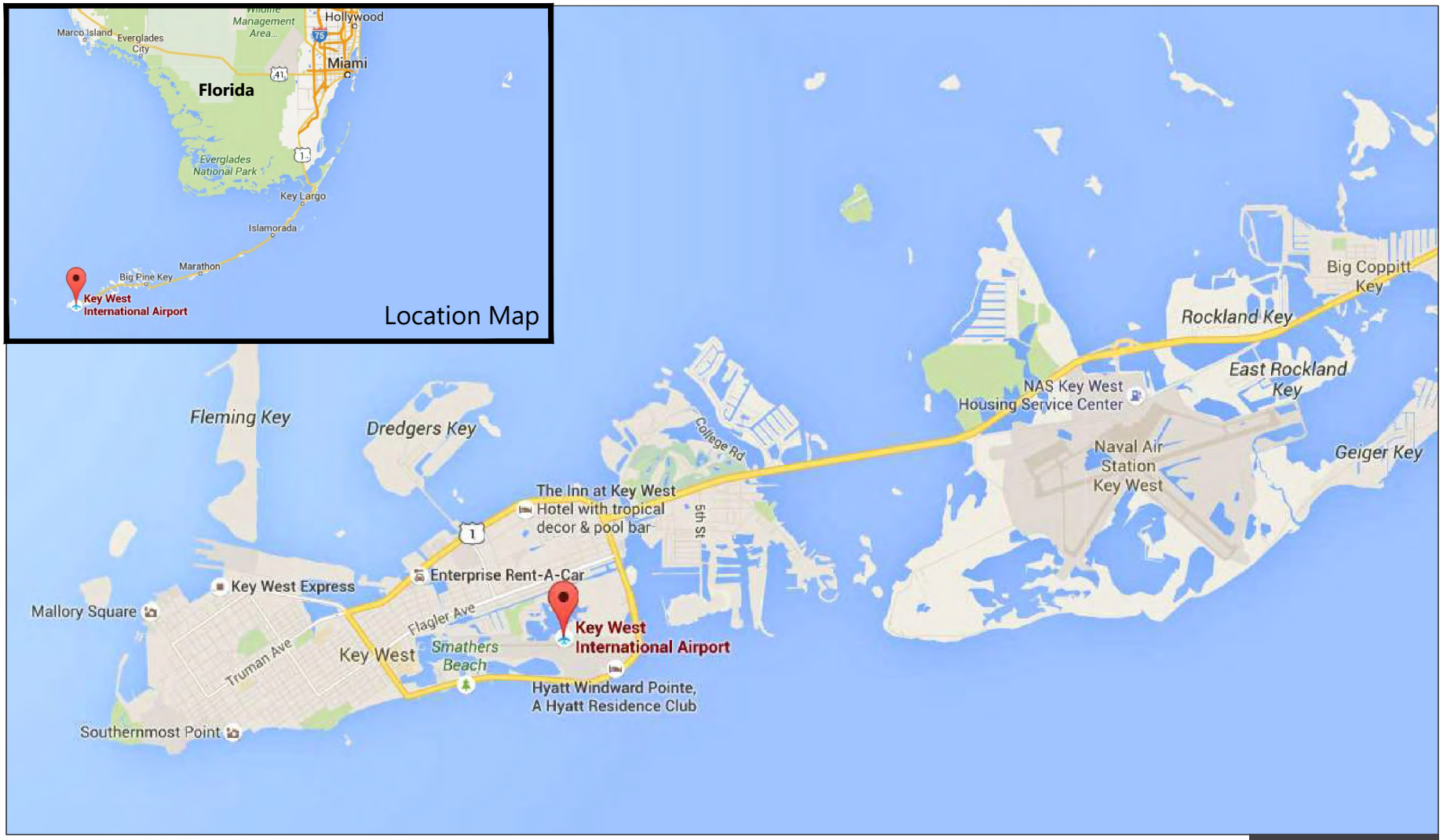
EYW was officially declared a port of entry for Cuba in 2011, enabling the accommodation of flights on a limited basis. The County initiated a U.S. Customs and Border Protection (CBP) facility expansion project in 2015 to increase Customs' processing capabilities.

2.1.2 PRIOR STUDIES

The previous Airport master plan was completed in 2003, after which the County undertook the initial steps to improve the Airport's terminal facilities. An Environmental Assessment (EA) was completed in 2005 for a passenger terminal building expansion project, which encompassed the addition of a new terminal building and renovations of existing facilities. The new terminal opened in 2009 and renovations to the 1957 terminal, which began shortly thereafter, were completed in 2010.

In addition to the terminal improvements undertaken since completion of the 2003 Master Plan, the County undertook an extensive Runway Safety Area (RSA) Improvement Project. This project required an EA, which was completed in 2007, as well as an extensive permitting process. The first phase of the RSA project was completed in 2011, which included an Engineered Materials Arresting System (EMAS) at the departure end of Runway 9. A second EMAS was constructed at the Runway 27 departure end in 2015.

[1] Source: KeysHistory.org, Florida Keys Cybermuseum, Transportation, April 2016.



SOURCE: Basemap from Google Maps Pro., March, 2016
PREPARED BY: American Infrastructure Development, Inc., March, 2016.

EXHIBIT 2-1

NORTH

Airport Location and Vicinity Map

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2.1.3 Historical Aircraft Operations

Table 2-1 provides a summary of aircraft operations at the Airport in 2006 through 2015.

Table 2-1: Historical Aircraft Operations

	ITINERANT					LOCAL			
CALENDAR YEAR	**AIR CARRIER**	**AIR TAXI**	**GENERAL AVIATION**	**MILITARY**	**TOTAL**	**CIVIL**	**MILITARY**	**TOTAL**	**TOTAL OPERATIONS**
2006	7,526	21,880	34,321	1,034	64,761	12,724	9,564	22,288	87,049
2007	6,331	24,714	30,964	3,270	65,279	13,024	12,183	25,207	90,486
2008	5,810	20,870	28,214	5,002	59,896	10,995	152	11,147	71,043
2009	6,555	11,866	28,084	263	46,768	7,939	197	8,136	54,904
2010	7,317	12,338	30,769	367	50,791	6,348	114	6,462	57,253
2011	7,624	10,858	33,946	459	52,887	7,420	64	7,484	60,371
2012	7,941	12,919	32,936	372	54,168	8,702	22	8,724	62,892
2013	11,490	11,492	27,340	458	50,780	6,435	231	6,666	57,446
2014	13,850	10,259	23,981	621	48,711	4,833	41	4,874	53,585
2015	14,456	9,804	24,851	598	49,709	3,761	78	3,839	53,548
Total	**88,900**	**147,000**	**295,406**	**12,444**	**543,750**	**82,181**	**22,646**	**104,827**	**648,577**

SOURCES: Federal Aviation Administration, Operations Network and Ricondo & Associates, Inc. April 2016
PREPARED BY: American Infrastructure Development, Inc., and Ricondo & Associates, Inc. April 2016

In 2007, six Florida airports (FLL, RSW, MIA, APF, MCO, and TPA) serviced nonstop flights from EYW. A seventh location was added in 2008, with service being provided to PBI, increasing intrastate departures to 233 per week. In 2010, service to PBI and APF was halted, causing EYW's average weekly departures to fall to 168. No new flight destinations were added in 2011, keeping the average weekly departures low at 148[2]. In November 2012, Southwest Airlines introduced Boeing 737-700 jet service at the Airport, including nonstop flights between Key West and New Orleans, Orlando, and Tampa. By 2013, the average number of weekly flights at EYW increased back to 168, though still notably less than the numbers seen in the early 2000s; subsequently, Southwest Airlines ceased all service at the Airport in June 2014.

Although Southwest ceased service at the Airport in June 2014, American Airlines, Delta Air Lines, and Silver Airways have continued to add seat capacity at EYW, thus filling a large percentage capacity lost after Southwest's withdrawal. These airlines offer non-stop service between EYW and Tampa, Orlando, Fort Myers,

[2] Florida Department of Transportation, Analysis of Scheduled Commercial Air Service in Florida, Update 2014

Miami, Fort Lauderdale, Atlanta, Charlotte, and Washington, D.C. (Dulles and National Airports). Most recently, Silver Airways applied in March 2016 to the Department of Transportation for scheduled air service from Key West to Havana, Cuba.

2.1.4 Recent Capital Improvement Projects

Since completion of the previous Airport Master Plan in 2003, the County has maintained its commitment to implement projects identified in the Airport Capital Improvement Program (CIP) and on the 2003 Airport Layout Plan (ALP). In addition, a Title 14 Code of Federal Regulations Part 150 (14 CFR Part 150) Noise Compatibility Program Update was formally approved by the Federal Aviation Administration (FAA) in March 2015. **Table 2-2** presents the facility improvement and noise-related projects that have been completed at the Airport since 2003.

Table 2-2: Capital Improvement Projects Completed at the Airport since 2003

PROJECT	YEAR COMPLETED
Airport Master Plan	2003
Environmental Assessment – Passenger Terminal Building Expansion	2005
Environmental Assessment – Runway Safety Area Improvements	2007
New 2-Level Passenger Terminal Passenger Building	2009
Renovations of the Original Terminal Building	2010
Runway 9-27 RSA Improvements and Runway 9 Departure End Emergency Materials Arresting System	2011
Land Acquisition – East End Runway 9-27 Runway Protection Zone and Runway Approach	2013
14 Code of Federal Regulation (CFR) Part 150 Update – Noise Exposure Maps	2013
Baggage Claim/Arrivals Improvements	2013
Faraldo Circle Entrance Roadway Improvements	2014
Runway 9-27 RSA Improvements Phase 2 and Runway 27 Departure End Emergency Materials Arresting System	2015
14 CFR Part 150 Update – Noise Compatibility Program	2015
Airfield Drainage Improvements	2015
Commercial Apron Reconstruction	Ongoing
U.S. Customs and Border Protection Facility Improvements	Ongoing
Noise Insulation Program – Planning and Eligibility Testing Phase	Ongoing
Airfield Security Improvements	Ongoing

SOURCES: EYW Capital Improvement Plan and Passenger Facility Charge Applications, and Jacobs Engineering Group Inc.
PREPARED BY: American Infrastructure Development, Inc., and Ricondo & Associates, Inc. April 2016

2.1.5 Airport Capital Improvement Program

Projects anticipated to be implemented in coming years will be programmed in either a passenger facility charge (PFC) application or an FAA Airport Improvement Program (AIP) grant application.

2.1.6 Airport Property

Exhibit 2-2 depicts the Airport property limits. The County acquired the 9-acre Parcel "7" in 2013 to enhance safety and protect the Airport from non-compatible land use development within the runway protection zones (RPZ) and the runway approach surface. The property was acquired using local, FAA, and State funds.

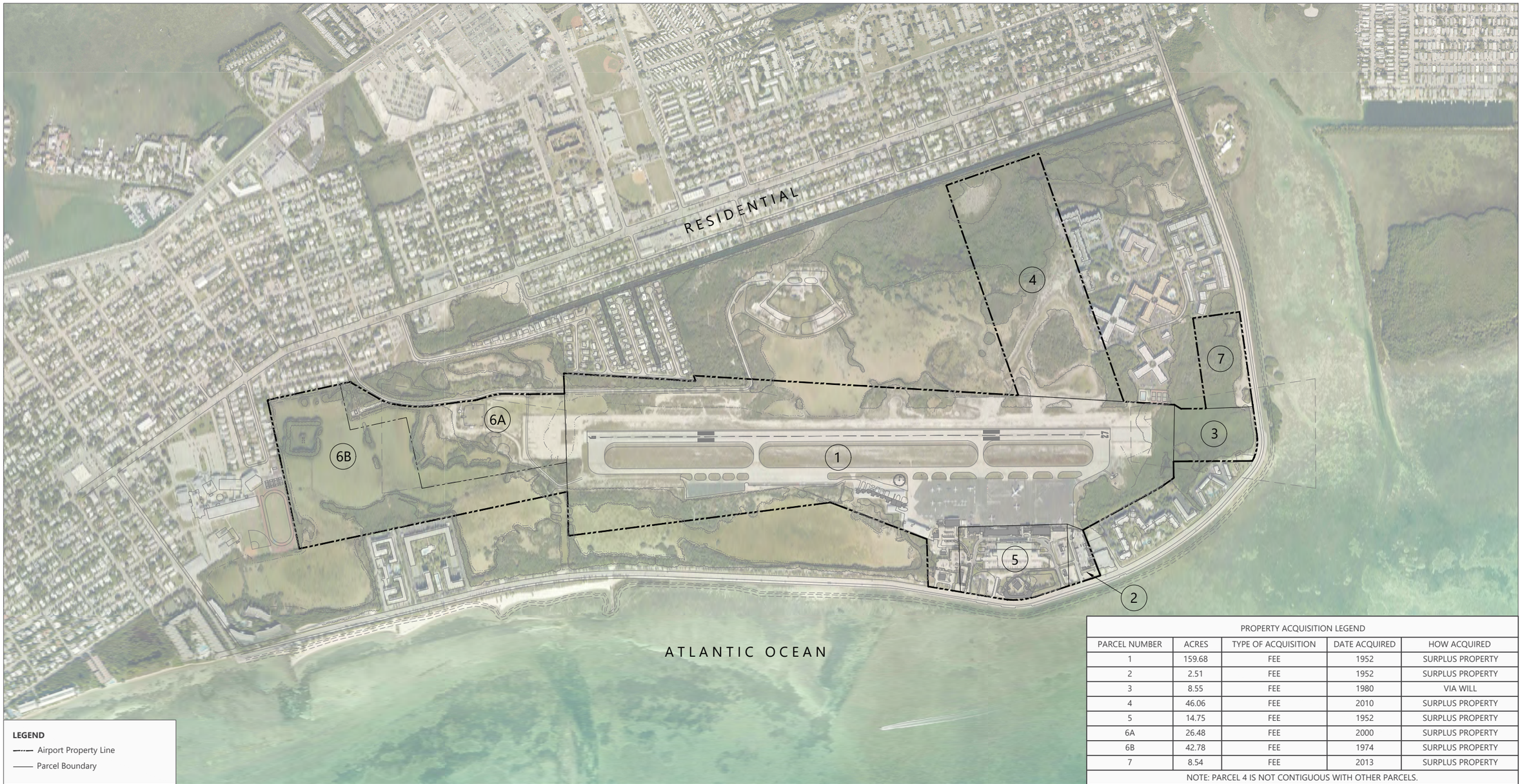
2.2 Airfield System

The airfield includes those facilities necessary to support the movement and operation of aircraft, including runways, taxiways, and apron areas, along with associated markings, lighting systems, and instrumentation. The locations of airfield facilities at EYW are shown on **Exhibit 2-3**. The Airport Reference Point, which defines the midpoint of the airfield, is located at 24°33'22.0"N latitude and 81°45'34.4"W longitude (North American Datum 83) and the Airport elevation (the highest point on the runway) is 3.35 feet above mean sea level (MSL).

2.2.1 RUNWAY LAYOUT AND TAXIWAY NETWORK

Runway 9-27, the only runway at EYW, is 5,075 feet long and 100 feet wide. Runway 9-27 consists of an asphalt overlay on asphalt concrete pavement. and is able to accommodate aircraft weighting up to 195,000 pounds, including commercial jets, turboprops, military aircraft, and large general aviation aircraft (e.g., business jets). Runway pavement strength can be expressed as single-wheel loading, dual-wheel loading, and dual-tandem-wheel loading. The aircraft gear type and configurations dictate how the aircraft weight is distributed on the pavement and determine pavement response to loading. Examination of gear configuration, tire contact areas, and tire pressure in common use areas, indicates that pavement strength is related to aircraft maximum take-off weight. Runway strength is 75,000 pounds for single-wheel aircraft, 125,000 pounds for dual-wheel, and 195,000 pounds dual-tandem wheel. The last overlay/construction work completed on Runway 9-27 was in 2003 according to the Florida Department of Transportation's (FDOT's) *Statewide Airfield Pavement Management Program, District 6 Report*, dated June 2015. The report indicates that the runway has a pavement condition index (PCI) rating between 57 and 60 or "Fair.". **Exhibit 2-4** provides the results of FDOT's 2015 airfield pavement assessment.

Runway 9-27 has an EMAS at each end, installed as part of an extensive RSA Enhancement Project undertaken by the County. The Runway 9 departure end EMAS is 340 feet long by 120 feet wide. The Runway 27 departure end EMAS is 274 feet long by 122 feet wide and is located 307 feet from the existing runway end.

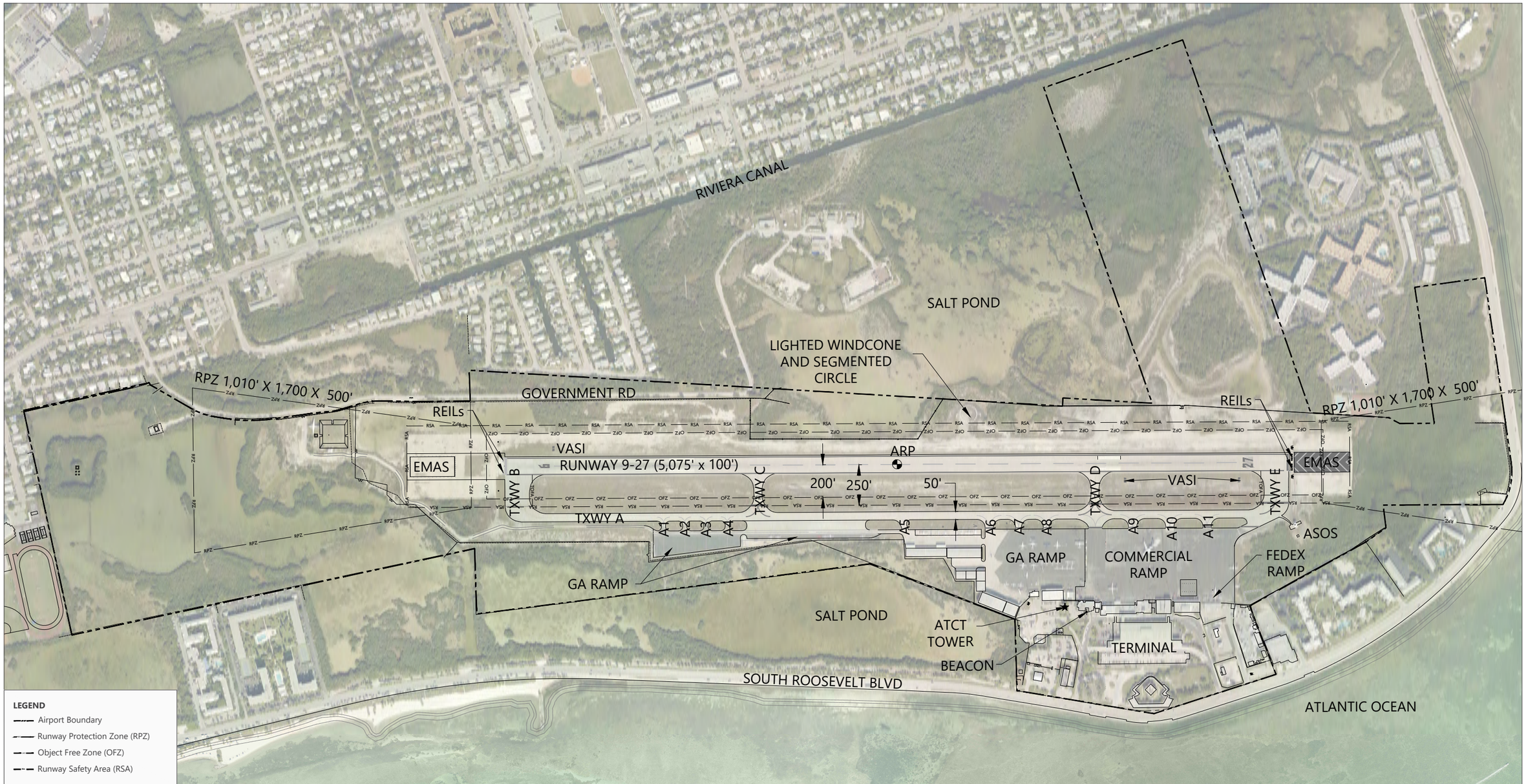


PROPERTY ACQUISITION LEGEND				
PARCEL NUMBER	ACRES	TYPE OF ACQUISITION	DATE ACQUIRED	HOW ACQUIRED
1	159.68	FEE	1952	SURPLUS PROPERTY
2	2.51	FEE	1952	SURPLUS PROPERTY
3	8.55	FEE	1980	VIA WILL
4	46.06	FEE	2010	SURPLUS PROPERTY
5	14.75	FEE	1952	SURPLUS PROPERTY
6A	26.48	FEE	2000	SURPLUS PROPERTY
6B	42.78	FEE	1974	SURPLUS PROPERTY
7	8.54	FEE	2013	SURPLUS PROPERTY
NOTE: PARCEL 4 IS NOT CONTIGUOUS WITH OTHER PARCELS.				

SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015. Property Map Details, 2003 Airport Master Plan and Airport Management – Parcel 7 Information.
PREPARED BY: American Infrastructure Development, Inc., March, 2016.

EXHIBIT 2-2

Airport Property Map



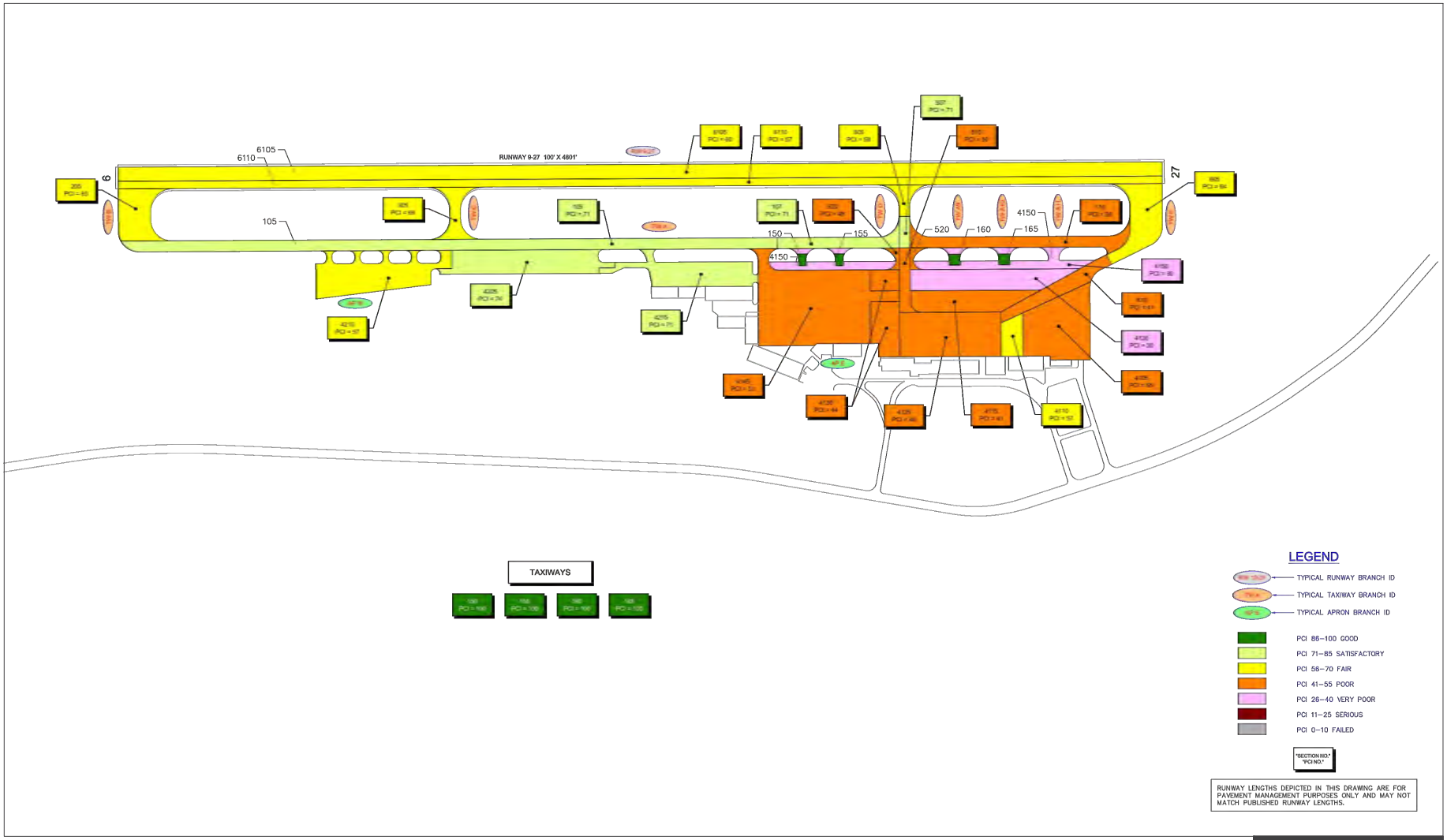
SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., April, 2016.

EXHIBIT 2-3

NORTH 0 600 ft.

Airfield Facilities

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SOURCE: Basemap, Florida Department of Transportation (FDOT), Airfield Pavement Management Program, June, 2015
PREPARED BY: American Infrastructure Development, Inc., March, 2016.

EXHIBIT 2-4

NORTH 0 700 ft.

Airfield and Apron Pavement Conditions

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The runway was originally 4,801 feet long but a project was completed in 2017 to increase the departure length of Runway 9 by approximately 274 feet, to 5,075 feet. This was accomplished by using the existing 309 feet of overrun pavement located between the Runway 9 threshold and the start of the EMAS. A minimum 35-foot setback from the runway threshold to the EMAS must remain; therefore, a total of 274 feet was re-classified as runway pavement. The project was completed in May 2017.

The taxiway system at the Airport provides access between the runway and various aircraft parking aprons throughout the airfield. Taxilanes are designated within and adjacent to the apron areas to facilitate the movement of aircraft between parking positions and taxiways. All of the taxiways at EYW are asphalt and have medium intensity taxiway lights (MITL). The full-length parallel Taxiway A is 50 feet wide and is located 315 feet south of the Runway 9-27 centerline. Four taxiways (B, C, D, and E) connect Taxiway A to Runway 9-27, and an additional 11 taxiways (A1 through A11) connect Taxiway A to aircraft parking areas and support facilities at EYW.

Table 2-3 provides the pavement condition of the taxiways at EYW according to FDOT's 2015 *Statewide Airfield Pavement Management Program*. Taxiway A11 will be rehabilitated as part of a Commercial Apron Reconstruction Project to be initiated in 2016.

2.2.2 AIRFIELD LIGHTING AND NAVIGATIONAL AIDS

Airfield lighting and navigational aids are necessary at all airports that accommodate aircraft operations during nighttime hours or during inclement weather. Such aids enable pilots to identify the airport from the air and help them maneuver safely on the ground during reduced visibility conditions. The following subsections detail the various airfield lighting and navigational aid components present at EYW.

2.2.2.1 Airport Rotating Beacon

The Airport beacon indicates the location and presence of the Airport at night or during low visibility conditions. The rotating beacon at EYW is 71 feet in height and located south and west of the aircraft rescue and firefighting (ARFF) station. This navigational aid consists of an optical rotating beacon that projects two beams of sequenced flashing lights, one green and one white, 180 degrees apart, which designate a civil land airport. The beacon is in good condition and is continuously operated during nighttime hours and when the airfield is operating under instrument flight rule (IFR) conditions.

2.2.2.2 Runway/Taxiway Edge Lighting

Runway edge lights enable pilots to identify the edges of the runway and assist them in determining the runway length remaining during periods of darkness and restricted visibility. The lights marking the ends of the runway emit red light toward the runway to indicate the end of the runway to a departing aircraft, and emit green light outward from the runway end to indicate the runway threshold to pilots of landing aircraft. These lighting systems are classified according to their intensity or brightness. Runway 9-27 is equipped with standard medium intensity runway lights (MIRL) along the runway edges.

Table 2-3: Existing Taxiway Inventory and Conditions

TAXIWAY	TAXIWAY WIDTH (FEET)	AGE (YEARS)	PAVEMENT CONDITION INDEX/CONDITION	TYPE
A	50	12	71 Satisfactory to D / 55 Poor from D to E	Asphalt
B	150	12	63 Fair	Asphalt
C	50	12	68 Fair	Asphalt
D	50	12	58 Fair midpoint to Runway / 71 Fair midpoint to A	Asphalt
E	150	12	64 Fair	Asphalt
A1	25	12	57 Fair	Asphalt
A2	25	12	57 Fair	Asphalt
A3	25	12	57 Fair	Asphalt
A4	25	12	57 Fair	Asphalt
A5	37.5	9	71 Satisfactory	Asphalt
A6	50	12	53 Poor	Asphalt
A7	35	0	Good	Asphalt
A8	35	0	Good	Asphalt
A9	50	0	Good	Asphalt
A10	50	0	Good	Asphalt
A11	50	12	Very Poor	Asphalt

SOURCE: Florida Department of Transportation, *Statewide Airfield Pavement Management Program, District 6 Report*, 2015.
PREPARED BY: American Infrastructure Development, Inc., and Ricondo & Associates, Inc. April 2016

Similarly, all taxiways and associated connectors are equipped with medium intensity taxiway lights (MITL) along the taxiway edges. All lighting is in good condition according to Airport staff. Although none of the existing taxilanes has a lighting system, overhead lighting fixtures in the primary ramp areas assist in visual guidance during nighttime operations.

2.2.2.3 Approach Lighting

Runway 9-27 is equipped with runway-end identifier lights (REIL) to aid in identifying the approach end of the runway. The REIL system consists of a pair of synchronized flashing lights located laterally on each side of the runway threshold. When the Airport traffic control tower (ATCT) is closed, the REILs and MIRLs for Runway 9-27 can be activated by pilots using the Common Traffic Advisory Frequency 118.200.

Visual glide slope indicators aid pilots in judging the correct approach slope of the aircraft toward the touchdown zone of a runway. Precision approach path indicators (PAPIs) and visual approach slope indicators

(VASIs) are a system of lights that may be visible for up to 5 miles during the day and up to 20 miles or more at night. VASI systems are being replaced by newer technology PAPI systems at most airports. Typically, basic VASIs consist of two sets of lights (4-box). PAPI systems use light units similar to the VASI, but are installed in a single row of either two or four light units. Each set of lights is designed to appear as either white or red, depending upon the approach angle. When the pilot is approaching the lights at the proper angle, the first set of lights appears white and the second set appears red. When both sets appear white, the pilot is flying too high, and when both appear red, the pilot is flying too low. Runway 9-27 has been upgraded since the last Master Plan was completed from a VASI system to a four-light PAPI system located on the left side of the Runway 9 approach end and the right side of the Runway 27 approach end.

2.2.2.4 Wind Cones

Wind cones provide pilots with existing wind conditions and direction. Runway 9-27 is equipped with a lighted wind cone within a segmented circle located midway and north of Runway 9-27.

Table 2-4 provides a summary of lighting and approach aids provided on Runway 9-27 at EYW.

Table 2-4: Lighting and Navigational Approach Aids

RUNWAY END	RUNWAY EDGE LIGHTS	REIL	WIND CONE	VISUAL GLIDE SLOPE INDICATOR	THRESHOLD CROSSING HEIGHT (FEET)	VISUAL GLIDE ANGLE (DEGREES)	RUNWAY MARKING TYPE
9	MIRL	Y	Y	PAPI-4	35	3	Nonprecision Instrument
27	MIRL	Y	Y	PAPI-4	35	3	Nonprecision Instrument

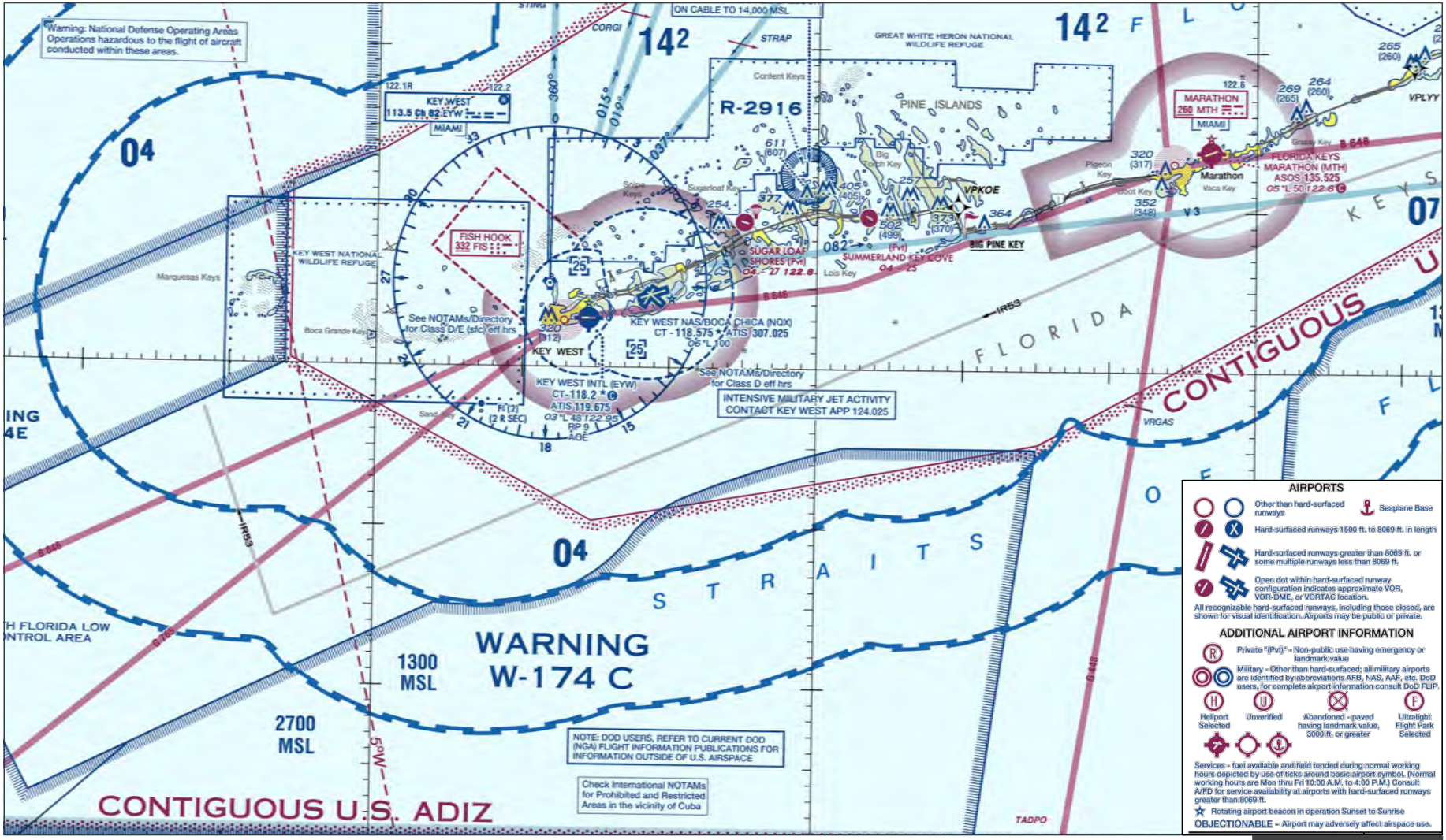
MIRL – Medium Intensity Runway Lights, REIL – Runway End Identifier Lights, PAPI – Precision Approach Path Indicators

SOURCES: Florida Department of Transportation, EYW and FAA Airport Master Records, effective 3 March 2016.
PREPARED BY: American Infrastructure Development, Inc., and Ricondo & Associates, Inc. April, 2016

2.2.3 REGIONAL AIRSPACE

The inventory of existing conditions includes navigational factors, such as military, public, and private airports; civil and military flight corridors; navigational and visual aids; military restricted and operational areas; published approaches; and known obstructions that affect approaches or departures at EYW.

Airports on the Miami Sectional Aeronautical Chart (see **Exhibit 2-5**), published by the National Oceanic and Atmospheric Administration (NOAA), located within 25 miles of EYW, are listed in **Table 2-5**. These airports include NAS Key West, 5.0 nautical miles (nm) east (bearing 73.1 degrees); Sugar Loaf Shores, 13 nm northeast (bearing 60.6 degrees); and Summerland Key, 21 nm northeast (bearing 70.5 degrees). Florida Keys Marathon Airport is located 40 nm from EYW.



SOURCE: National Oceanic and Atmospheric Administration (NOAA), Miami Sectional Chart, 2016
PREPARED BY: American Infrastructure Development, Inc., March, 2016.

EXHIBIT 2-5

NORTH

Sectional Aeronautical Chart of Airport Vicinity

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-1 Sectional Aeronautical Chart of Airport Vicinity.dwgLayout: Layout1 Plotted: June 10, 2020, 01:39PM

Table 2-5: Airports within 25 Miles

AIRPORT	OWNERSHIP	DISTANCE FROM EYW
NAS Key West	U.S. Navy	5 NM East
Sugar Loaf Shores	Private	13 NM Northeast
Summerland Key	Private	21 NM Northeast

NAS = Naval Air Station
NM = nautical miles

SOURCE: *Miami Sectional Aeronautical Chart*, August 18, 2016
PREPARED BY: American Infrastructure Development, Inc., and Ricondo & Associates, Inc. April 2016

Obstructions within 25 nautical miles of the Airport include a strobe-lighted and marked balloon up to 14,000 feet northeast of the Airport; and several towers located east, north, and west of the Airport. These towers are situated at elevations ranging from 143 feet to 611 feet above MSL. The latest FAA edition (03 March 2016 to 31 March 2016) of the *Takeoff Minimums, (Obstacle) Departure Procedures and Diverse Vector Areas (Radar Vectors)* indicates that pilots departing from Runway 9 or 27 must be aware of several obstacles, as indicated in **Table 2-6**.

Table 2-6: Departure Obstacles

DEPARTURE END OF RUNWAY	BEGINNING FROM DEPARTURE END OF RUNWAY	TYPE OF OBSTACLE
9	38 feet, 199 feet, right of centerline, up to 75 feet above ground level /82 feet above mean sea level	Rod on antenna, dome on building, poles and numerous trees
9	4 feet, 220 feet, left of centerline, up to 38 feet above ground level / 45 feet above mean sea level	Obstruction light on building, pole, and numerous trees
27	27 feet, 116 feet, right of centerline up to 83 feet above ground level / 90 feet above mean sea level	Poles and numerous trees
27	202 feet, 78 feet, left of centerline up to 37 feet above ground level / 44 feet above mean sea level	Numerous bushes and trees

SOURCE: Federal Aviation Administration, *Takeoff Minimums, (Obstacle) Departure Procedures, and Diverse Vector Area (Radar Vectors) for Key West FL,* 28 APR 2016 to 26 MAY 2016
PREPARED BY: American Infrastructure Development, Inc., and Ricondo & Associates, Inc. April 2016

Interviews and conversations with the EYW FAA Air Traffic Control Manager in March 2016 provided insight as to how arrivals and departures at EYW are handled. The airspace in the vicinity of Key West International Airport is a complex system because of the proximity of NAS Key West – Boca Chica Field.

Procedures within the Airport's airspace are subject to certain restrictions because of overlapping airspace between NAS Key West and EYW. Operations within each airspace are coordinated by the NAS Key West ATCT

and radar approach/departure control personnel. Aircraft landing at EYW are then handed off from the NAS Key West ATCT to the EYW ATCT personnel once their destination is known and there is no conflict with other traffic.

ATCT staff estimates that the flow of operations is to the east 80 percent of the time on a yearly average. However, seasonal fluctuations and storms may dictate use of the runway in a westerly flow.

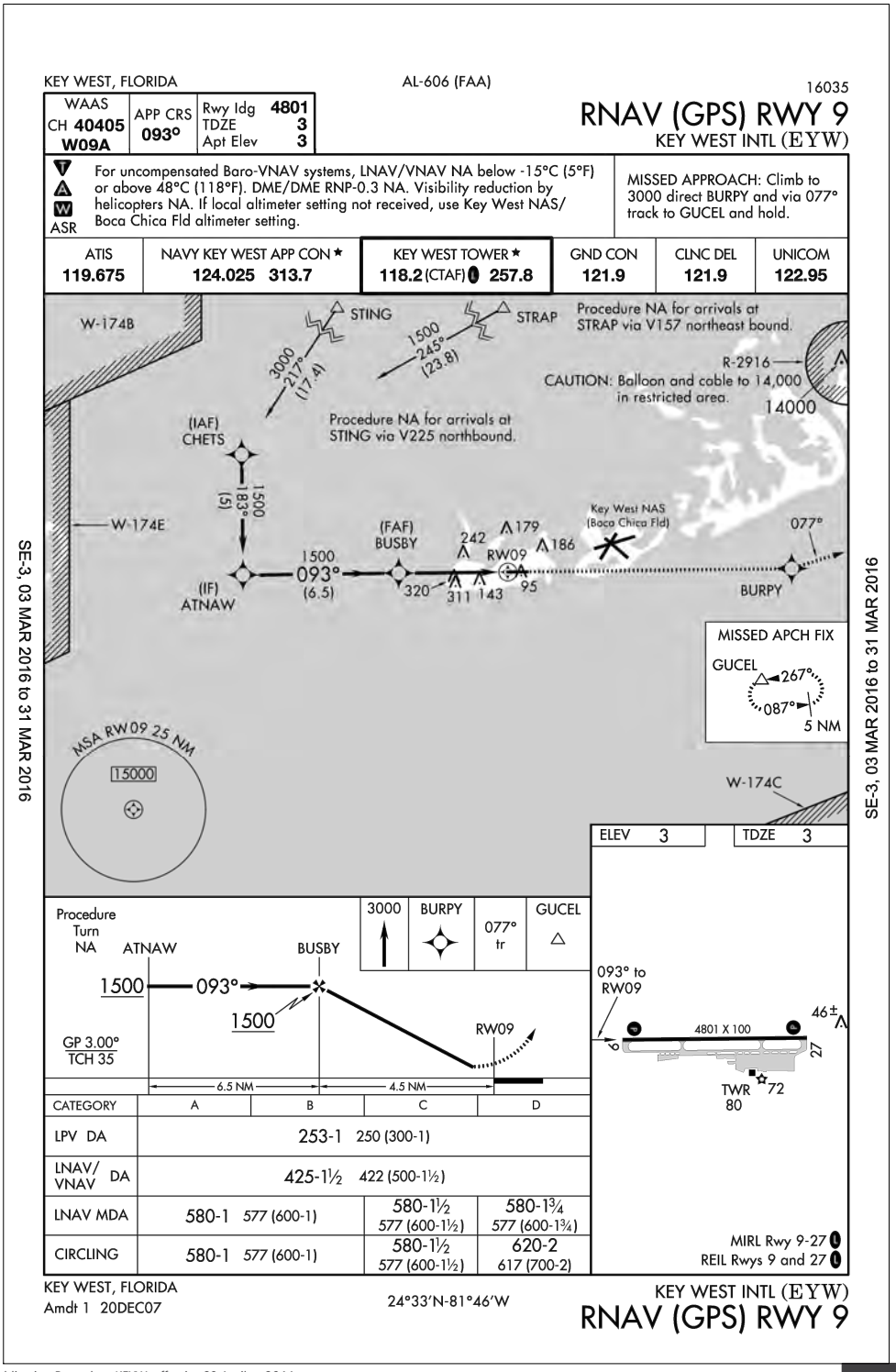
The EYW ATCT is operational from 7:00 a.m. to 9:00 p.m. daily. The NAS Key West ATCT and radar approach/departure control facilities are operational from 7:00 a.m. to midnight and are served by an Airport Surveillance Radar (ASR-8) unit. Controllers in the ATCTs interface with the Miami Air Route Traffic Control Center (ARTCC). The ARTCC provides airspace approach and departure services when NAS Key West approach control is closed. The ARTCC provides service to the combined airspace from midnight to 7:00 a.m. All ATCT and radar facilities are operational 7 days a week.

According to the EYW ATCT Manager, an airspace delineation boundary has been established to identify overlapping airspace. Specific procedures are to be followed during visual meteorological conditions (VMC) and instrument meteorological conditions (IMC). During VMC, civil aircraft departing from Runway 9 are required to make a left turn and stay west of the boundary. Military aircraft stay east of the delineation boundary used by the ATCT. During IMC, NAS Key West ATCT and radar approach/departure control personnel provide position and altitude data to all aircraft. Departures from EYW are held whenever an instrument approach under IFR conditions is being conducted to either EYW or NAS Key West runways.

EYW and NAS Key West airspace is adjacent to the Air Defense Identification Zone, United States Defense Area R-2916, and numerous warning areas outside of FAA jurisdiction and over international waters. Traffic from the north and northeast is routinely routed clear of warning areas. The U.S. Navy uses some warning areas for high-speed aerial combat training, including surface-to-air and air-to-air missile firings and anti-aircraft gunnery.

2.2.4 Published Instrument Approach Procedures

EYW currently has two published Area Navigation (RNAV) global positioning system (GPS) nonprecision approaches, one to each runway end, and a nondirectional beacon (NDB) NDB-A circling approach to either runway end, as depicted on **Exhibits 2-6A**, **2-6B**, and **2-7**. A nonprecision instrument approach is one in which the pilot uses only horizontal navigational guidance to line the aircraft up with the runway. When flying such an approach, the pilot proceeds along the specified course and descends to the minimum descent altitude (MDA) while locating the runway. If the runway (or runway environment) is in sight, the pilot may land; otherwise, the pilot must execute a missed approach.



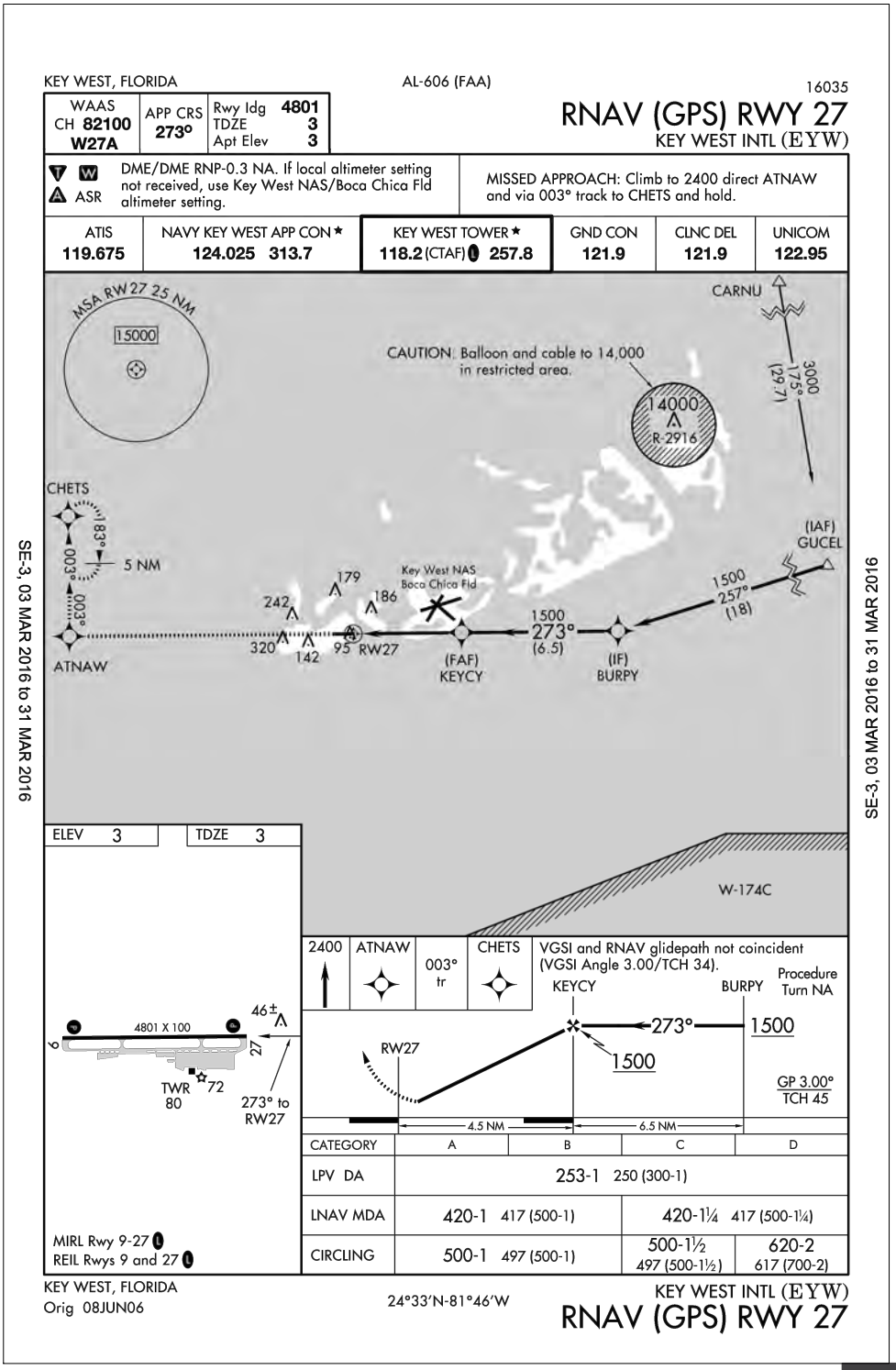
SOURCE: FAA U.S. Terminal Publication Procedure KEYW, effective 28 April to 26 May.
PREPARED BY: American Infrastructure Development, Inc., March, 2016.

EXHIBIT 2-6A

NORTH

Runway 9 GPS Approach

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-6A unway 9 PS A roach.dwgLayout: Layout1 Plotted: un 10, 2020, 0 PM



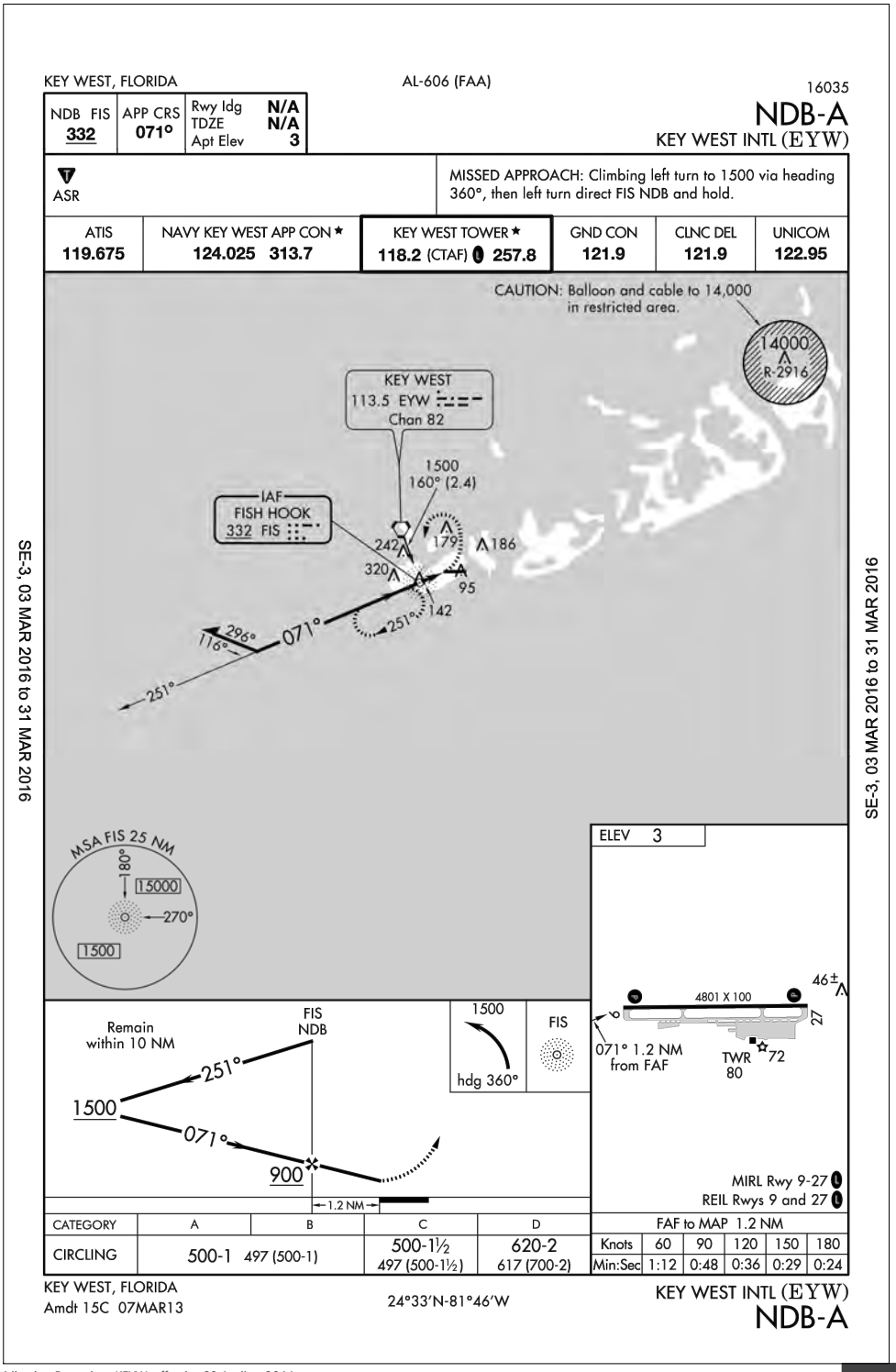
SOURCE: FAA U.S. Terminal Publication Procedure KEYW, effective 28 April to 26 May.
PREPARED BY: American Infrastructure Development, Inc., March, 2016.

EXHIBIT 2-6B

NORTH

Runway 27 GPS Approach

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-6 unway 27 PS A roach.dwgLayout: Layout1 Plotted: un 10, 2020, 0 9PM



SOURCE: FAA U.S. Terminal Publication Procedure KEYW, effective 28 April to 26 May.
PREPARED BY: American Infrastructure Development, Inc., March, 2016.

EXHIBIT 2-7

NORTH

Runway 9-27 NDB-A Approach

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-7 D -A A roach.dwgLayout: Layout1 Plotted: un 10, 2020, 0 :30PM

The RNAV (GPS) Runway 9 approach allows straight-in and circling approaches to Runway 9. The straight-in approach to Runway 9 has an MDA of 580 feet and visibility of 1 mile for Aircraft Approach Categories (AACs) A and B, an MDA of 580 feet and visibility of 1.5 miles for AAC C, and an MDA of 580 feet and visibility of 1.75 miles for AAC D. Circling approaches are allowed with an MDA of 580 feet and visibility of 1 mile for AACs A and B, an MDA of 580 feet and visibility of 1.5 miles for AAC C, and an MDA of 620 feet and visibility of 2 miles visibility for AAC D.

The RNAV (GPS) Runway 27 approach allows straight-in and circling approaches to Runway 27. The straight-in approach to Runway 27 has an MDA of 420 feet and visibility of 1 mile for AACs A and B and an MDA of 420 feet and visibility of 1.25 miles for AACs C and D. Circling approaches are allowed with an MDA of 500 feet and visibility of 1 mile for AACs A and B, an MDA of 500 feet and visibility of 1.5 miles for AAC C, and an MDA of 620 feet and visibility of 2 miles for AAC D.

The NDB-A approach provides for a circling approach to the Airport with an MDA of 500 feet and visibility of 1 mile for AACs A and B, an MDA of 500 feet and visibility of 1.5 miles for AAC C, and an MDA of 620 feet and visibility of 2 miles for AAC D. The NDB-A instrument approaches to EYW are conducted using the following navigational aids.

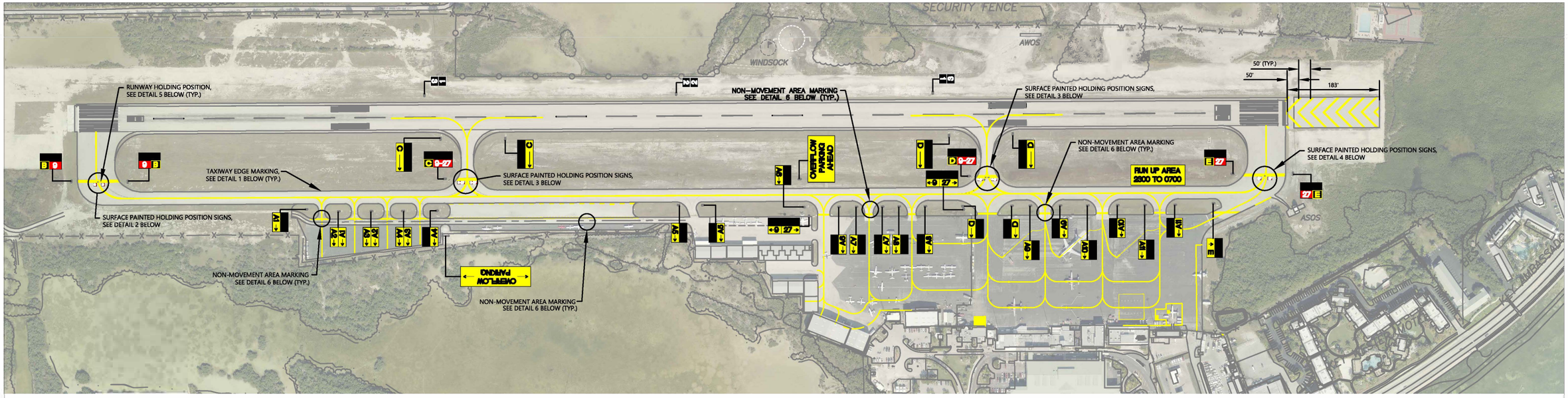
- Very High Frequency Omnidirectional Range Tactical Air Navigation (VORTAC) - Key West VORTAC, 113.5 Channel 82 EYW
- Non-Directional Beacon (NDB) - Fish Hook (FIS) NDB, 332

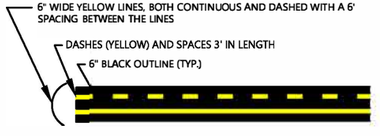
2.2.5 Airfield Signage and Marking Plans

EYW is certificated under 14 CFR Part 139, *Certification of Airports*, which requires a signage plan in the *Airport Certification Manual*. The signage plan must show the signage system needed to identify hold positions and taxiing routes in the movement area for air carrier aircraft in accordance with FAA Advisory Circular (AC) 150/5340-18D, *Standards for Airport Sign Systems*. The airfield signage plan should be updated as needed to comply with current safety standards and operating conditions. Standards for runway and taxiway markings are set in accordance with AC 150/5340-1K, *Standards for Airport Markings*. The signage and markings for the EYW airfield are provided on **Exhibit 2-8**. All airfield signs are lighted with light-emitting diodes (LEDs).

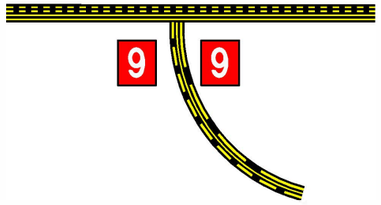
2.2.6 RAMP AND APRON AREAS

Aircraft parking aprons, also referred to as ramp areas, provide space for aircraft parking and circulation for aircraft transitioning between the apron and other facilities at the Airport. EYW has two distinct main apron areas, the commercial terminal apron and a general aviation (GA) apron, as well as two smaller apron areas designated for overflow parking during peak seasonal periods or highly attended Key West events. The commercial aircraft parking apron is located east of the centerline of Taxiway D and consists of approximately 41,000 square yards of asphalt pavement. The apron is adjacent to the passenger terminal building, the CBP facility, and the FedEx facility.

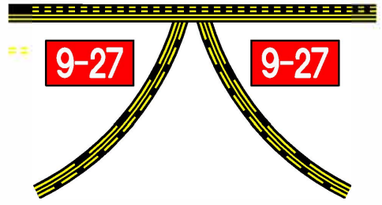




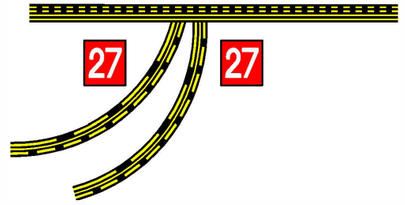
1 EXISTING — NON-MOVEMENT AREA MARKINGS
N.T.S.



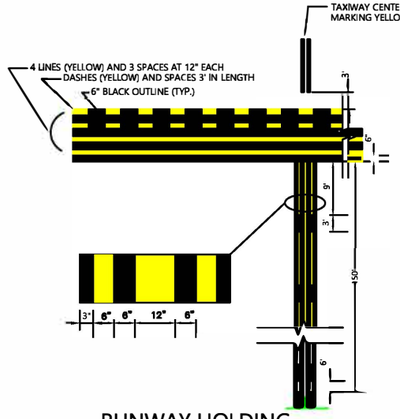
2 EXISTING — SURFACE PAINTED HOLDING POSITION SIGNS DETAIL-THERMOPLASTIC
N.T.S.



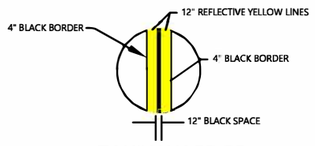
3 EXISTING — SURFACE PAINTED HOLDING POSITION SIGNS DETAIL-THERMOPLASTIC
N.T.S.



4 EXISTING — SURFACE PAINTED HOLDING POSITION SIGNS DETAIL-THERMOPLASTIC
N.T.S.



5 EXISTING — RUNWAY HOLDING POSITION MARKINGS
N.T.S.



6 EXISTING — TAXIWAY EDGE MARKING DETAIL
N.T.S.

SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015. Signage and Marking, Jacobs, Inc., March 2016.
PREPARED BY: American Infrastructure Development, Inc., March, 2016.

EXHIBIT 2-8

NORTH 0 400 ft.

Signage and Marking Plan

Drawing: C:\Users\Renee\Dropbox (AID)\1-PROJECTS\EYW\JAC16024-Airport-Master-Plan\03-Drawings\WIP\EXHIBITS\Signage and Markings\EYW-SIGN-MARK-PLAN 1-8.dwgLayout: Layout1 Plotted: May 5, 2016, 09:02AM

The commercial apron is marked for 12 aircraft parking spaces, including one reserved for U.S. Customs inspections. The commercial apron lighting is provided by four high mast floodlights. An additional 8,000 square yards of commercial apron is located in front of the FedEx building and provides parking for up to four Cessna 208 Caravan cargo aircraft.

Rehabilitation of the commercial aircraft parking apron is currently in design to increase its pavement strength. The existing pavement strength is 95,000 pounds dual wheel and the Boeing 737-700W aircraft that serve the Airport on a daily basis are approximately 132,500 pounds dual wheel. The rehabilitation project is projected to be completed in 2018.

The GA ramp/apron is discussed in Section 1.5.

2.2.7 Perimeter and Service Roads

The Airport has perimeter road access to the west, north, and east areas of the airfield. Access to these areas is not paved.

2.2.8 FENCING AND SECURITY GATES

An Airport perimeter fence limits access to the airfield and features vehicle and pedestrian gates. The Air Operations Area (AOA) is a secured area that can be accessed only by those who have been properly badged through the Monroe County Sheriff's Office, Airport Security Division. The Security Identification Display Area (SIDA) is a special security area designated by airport operators to comply with FAA regulations, specifically 14 CFR Part 107.205. An identification system must be used in this area. Before allowing unescorted access to this area, the person must be trained and his/her background investigated. Typically, the flight ramp and other sensitive operational areas of a U.S. commercial airport are designated as SIDAs.

Within the SIDA, a security fence separates the commercial apron area from the GA apron, as depicted on **Exhibit 2-9**. Anyone with proper security credentials may enter/exit the two areas through Security Gate 3. The Airport Security Division of the Sheriff's Office monitors who enters and exits the gate.

Exhibit 2-9: Fence Separating Commercial Apron from General Aviation Apron



SOURCE: American Infrastructure Development, Inc. Data Collection Trip, March 2016.
PREPARED BY: American Infrastructure Development, Inc. April 2016

Airport management is currently in the process of undertaking airfield security improvements, which includes increasing the height of the perimeter fence to 10 feet and upgrading the existing "L" shape barbed wire to a "Y" shape configuration. The existing security gate locations are indicated on **Exhibit 2-10**.

2.3 Passenger Terminal Facilities

This section provides an inventory of existing terminal facilities at EYW, which include the landside terminal area and the passenger terminal facilities.

2.3.1 OVERVIEW OF LANDSIDE TERMINAL AREA

The Airport landside terminal area consists of two distinct locations. Certain facilities are located south of the Faraldo Circle arrivals roadway and other facilities are located north of the arrivals roadway. Facilities south of the arrivals roadway include:

- the passenger departures roadway,
- the passenger ticketing and check-in terminal and associated facilities,
- the main parking garage,
- Airport maintenance vehicle storage area,
- One-hour free parking lot, and
- rental car pick-up/return area.

Facilities north of the arrivals roadway include:

- the passenger departure area/gate area, including concessions, passenger arrivals and baggage claim area, and rental car counters;
- the Adam Arnold Annex Building (Annex building), which includes the U.S. CBP facility, the Monroe County Sheriff - Airport Security Division, and a Greyhound bus station;
- the FedEx cargo building; rental car servicing areas;
- the ATCT; fuel farm;
- and general aviation facilities.

Landside terminal area facilities are depicted on **Exhibits 2-11A**, **2-11B**, and **2-11C** and are described in the sections below.

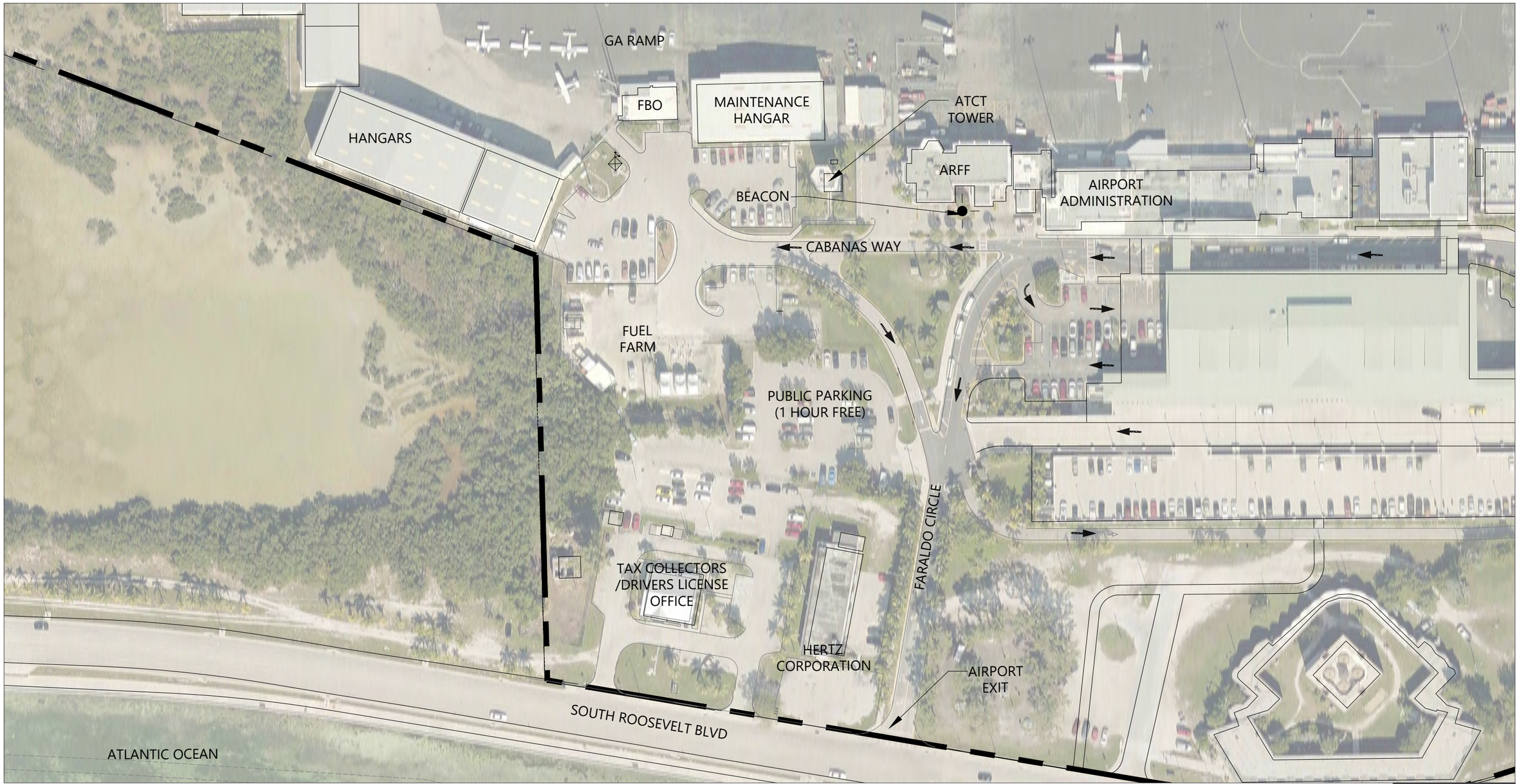


SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015. Gate locations, Perez Engineering, February 2014.
PREPARED BY: American Infrastructure Development, Inc., March, 2016.

EXHIBIT 2-10

Security Gate Locations

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-10 Security ate Locations.dwgLayout: 11x17L Plotted: un 11, 2020, 0 :0 AM



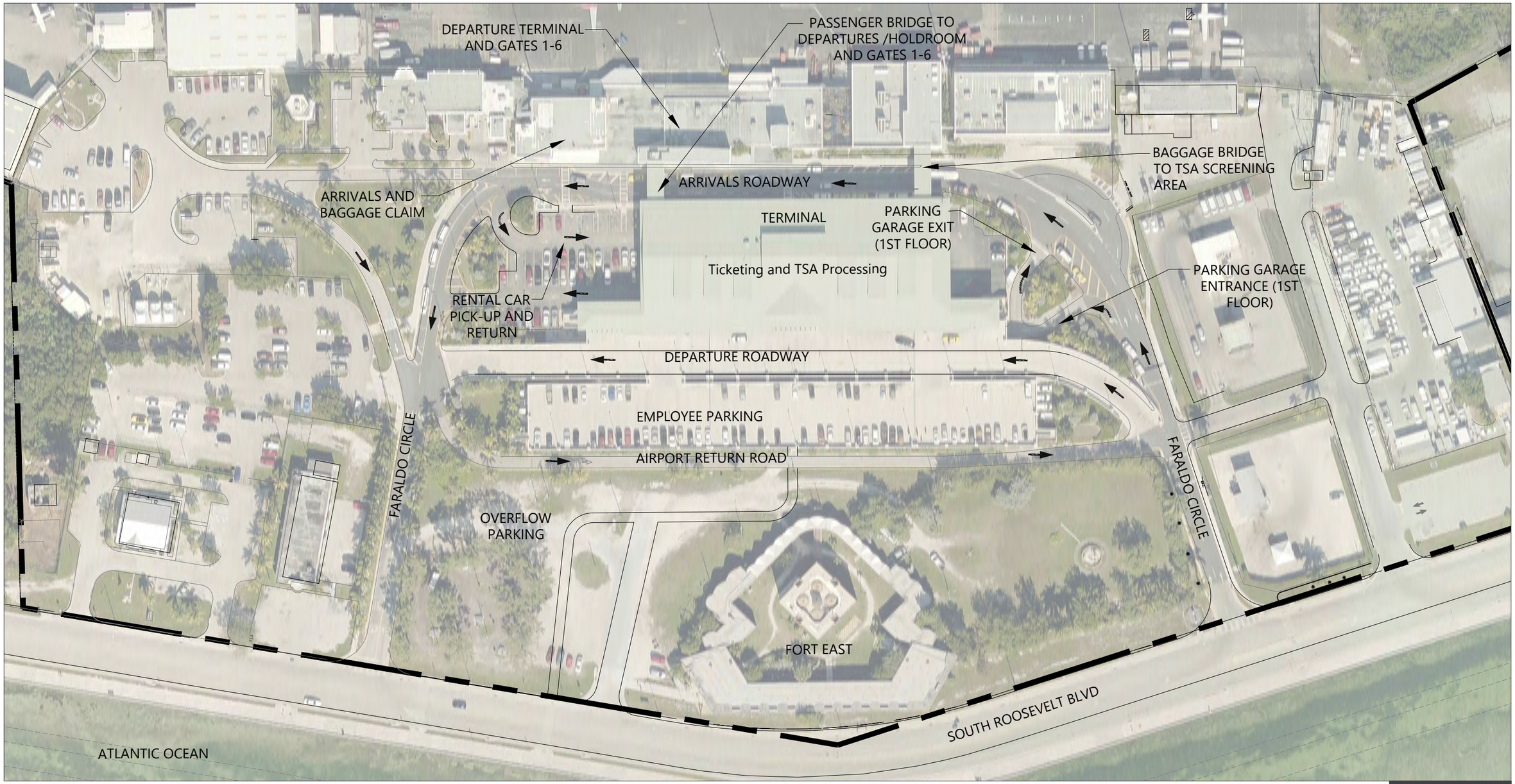
SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., April, 2016.

EXHIBIT 2-11A

NORTH 0 100 ft.

West Landside Terminal Area

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-11A West Landside Terminal Area.dwgLayout: 11x17L Plotted: un 11, 2020, 0: :09AM



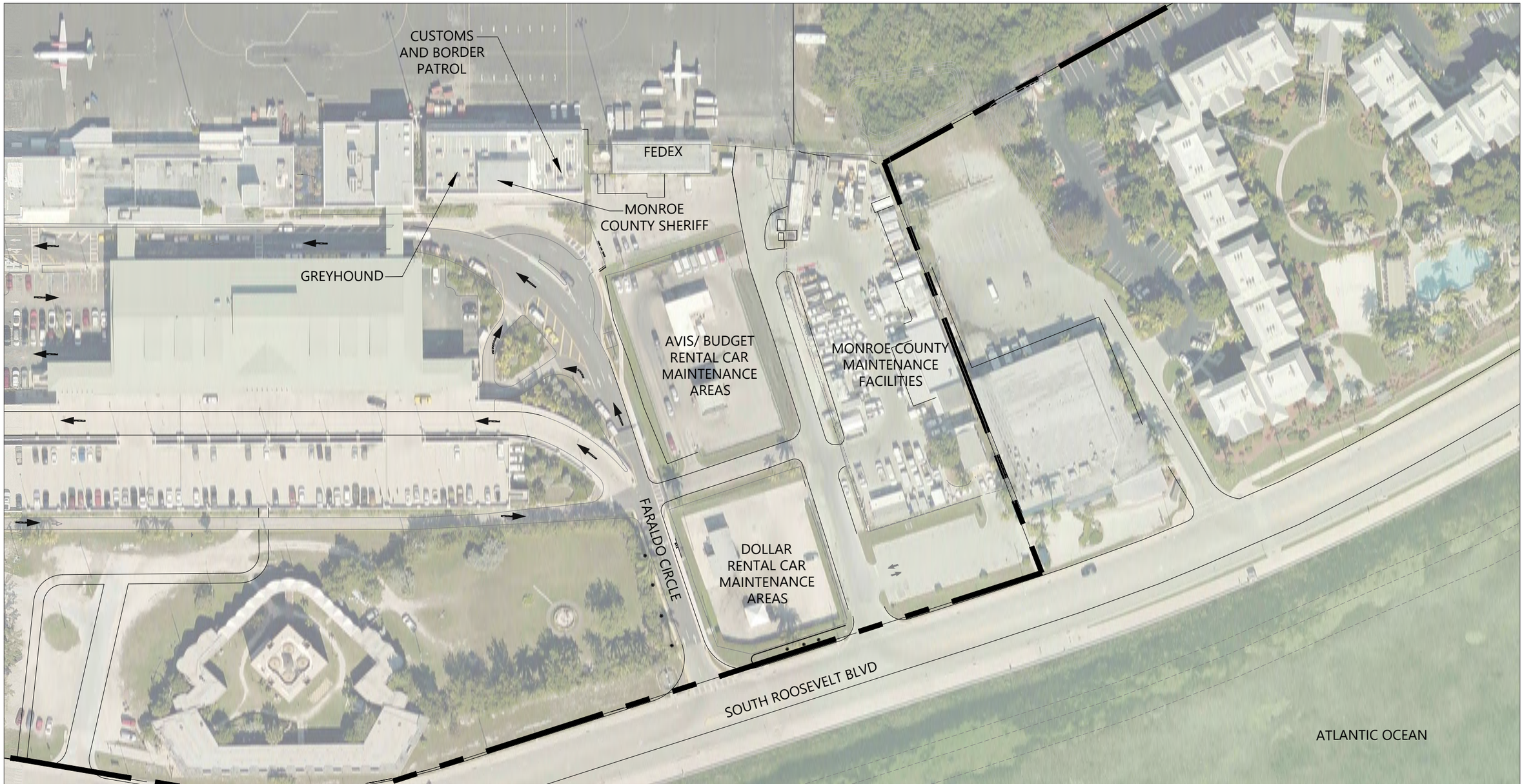
SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., April, 2016.

EXHIBIT 2-11B

NORTH 0 100 ft.

Central Landside Terminal Area

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-11 Central Landside Terminal Area.dwgLayout: 11x17L Plotted: un 11, 2020, 0: :10AM



SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., April, 2016.

EXHIBIT 2-11C

NORTH 0 100 ft.

East Landside Terminal Area

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-11C East Landside Terminal Area.dwgLayout: 11x17L Plotted: un 11, 2020, 0: :12AM

2.3.3 PASSENGER TERMINAL FACILITIES

The two-level passenger terminal building located north of the departures roadway was opened in 2009. The building is approximately 30,000 square feet in size. The terminal floor plan is shown on **Exhibit 2-12** and the terminal space allocation is summarized in **Appendix A**. The upper level of the terminal provides facilities for all departure check-ins and processing, including airline ticketing and passenger check-in; public space; airline offices; food, beverage, and other concessions; restrooms; Transportation Security Administration (TSA) processing of passengers and office space; a second-level passenger walkway; and an escalator and elevator for access to the secure departure holdrooms and aircraft gates.

In front of the building, there is ample covered and non-covered sidewalk for passenger drop-off. The non-secured circulation areas include ticketing, restrooms, visitor seating, and concessions.

In addition to passenger processing, checked baggage must also undergo a security screening process. Bags are placed on a baggage belt behind the ticket counters and are then transported via a conveyor belt across an elevated bridge to the secure baggage make-up and screening room located across the arrivals roadway.

The lower level 24,000 square foot passenger terminal building is located north of the arrivals roadway. The two structures are connected via an elevated walkway. The secure departures holdroom is located in the building, as is a separate arrivals area. Gates 1 through 6 provide access through doorways from the passenger terminal to the aircraft parking apron. The departures/gate area of the terminal has 200-seats with restrooms, a 160-seat restaurant/bar including an outdoor area for eating, and a small concessions/gift shop.

A separate passenger arrivals and baggage claim area is located west of the departure gates. It includes two baggage conveyor belts, rental car counters, restrooms, and a baggage service office. In front of the building, the covered and non-covered sidewalk for passenger pick-up is congested during peak times because of the demand for taxicabs.

Airline and tenant support facilities are located on the secure airside of the arrivals/departures terminals. **Exhibit 2-13** illustrates the location of facilities necessary for safe, efficient and secure airline and aircraft operations on the airside. These include baggage conveyor belts, ground service equipment (GSE) storage areas, baggage make-up areas, and TSA baggage screening and security areas, among others.

AIRPORT ADMINISTRATION OFFICES
ARRIVALS/BAGGAGE CLAIM 100
BUDGET AVIS DOLLAR THRIFTY
104 102 103
HERTZ 101
ARRIVAL CURBFRONT
COMMERCIAL VEHICLE PASSENGER PICK-UP
DELTA
SILVER
AMERICAN
DEPARTURES
LAST CHANCE
RESTROOMS
RETAIL SPACE
CONCH FLYER 144
143 CONCH FLYER
BAG MAKE-UP AREA 145
BAGGAGE BRIDGE 233
TAXI STAGING
ARRIVALS ROADWAY
RENTAL CAR
PICK-UP / RETURN
202 SECURITY CHECK-IN
RESTROOMS
CONCH FLYER RESTAURANT 221
GIFT SHOP OFFICE
LAST CHANCE GIFT SHOP 220
TSA
217 JET LAG GIFT SHOP
PUBLIC SPACE 201
ELEV. 2
ELEV. 1
BAGGAGE SCREENING ROOM 231
AIRLINE OFFICES
AMERICAN DELTA SILVER
TICKETING
DELTA SELF CHECK-IN
DEPARTURES CURBFRONT
DEPARTURES ROADWAY
EMPLOYEE PARKING

LEGEND
- Ticketing Area
- Shops and Restaurants
- Security Check In
- Baggage Make-up Area
- Departure Area
- Arrivals/Bag Claim Area
- Administration Offices

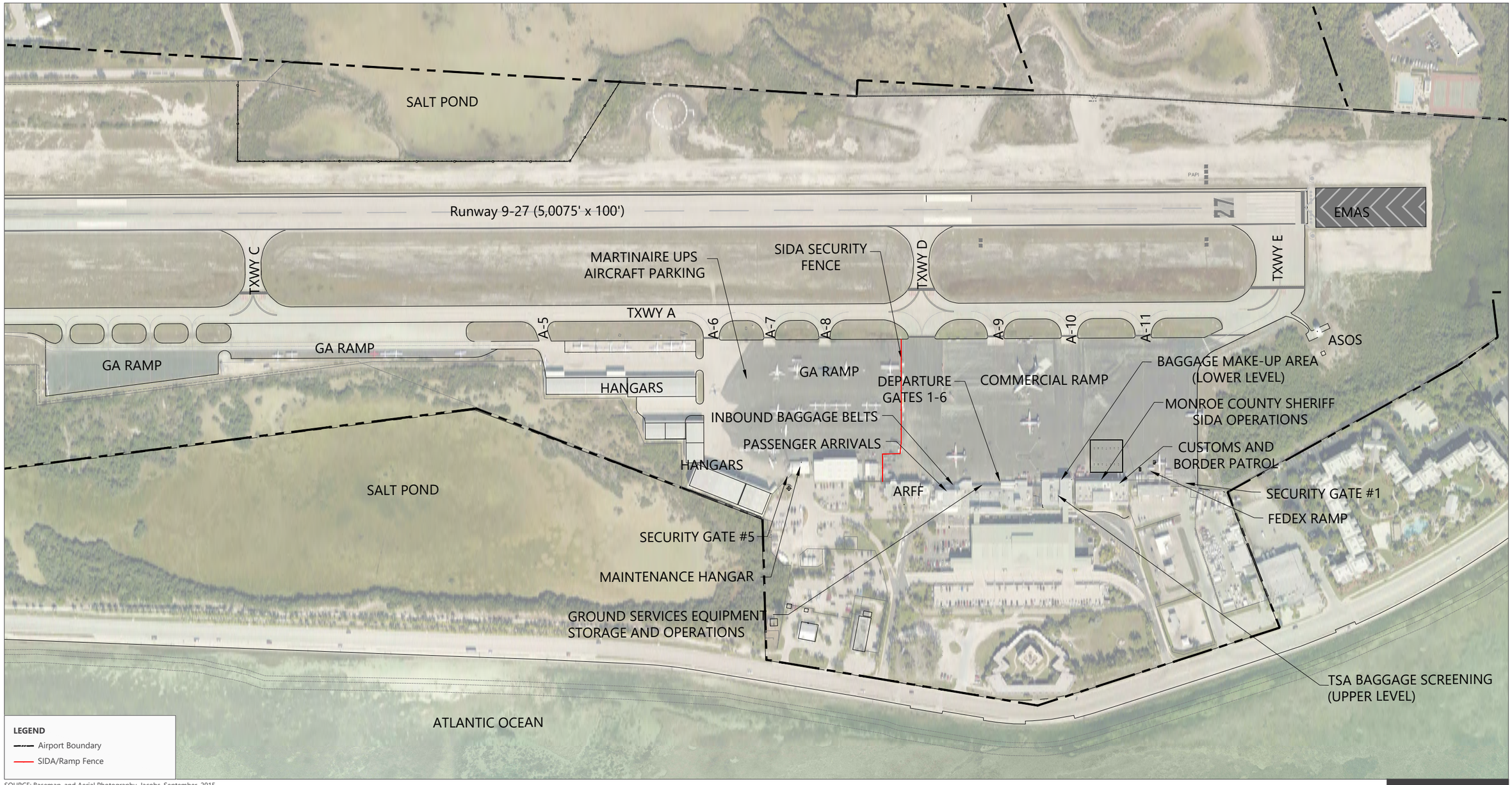
SOURCE: Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., March, 2016.

EXHIBIT 2-12

NORTH 0 50 ft.

Terminal Floor Plan

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-12 Terminal loor Plan.dwgLayout: 11 17 Plotted: un 11, 2020, 0: :20AM



SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., April, 2016.

EXHIBIT 2-13

NORTH 0 300 ft.

Passenger Terminal Airside Operations

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-13 Passenger Terminal Airside O erations.dwgLayout: 11x17L Plotted: un 11, 2020, 0: :21AM

2.4 On-Airport Curbsides and Roadways

This section documents the existing landside conditions at EYW; it assesses the terminal curbfront operations and Airport access roadways. Landside facilities include the nonsecure access and circulation in and around the Airport.

2.4.1 TERMINAL CURBFRONT

The departures curbfront adequately serves departures during Airport peak periods with approximately 381 linear feet available. Observations in March 2015 indicated that the arrivals curbfront can be congested during peak seasonal times. During peak hours, passengers must wait in line for a taxicab. The taxicab queue occupies approximately 70 feet of the 327 linear feet of arrivals curbfront available. All vehicles exiting the garage travel on the arrivals roadway past the arrivals curbfront. In addition, arriving passengers use a crosswalk to access rental cars located on the lower level of the parking garage.

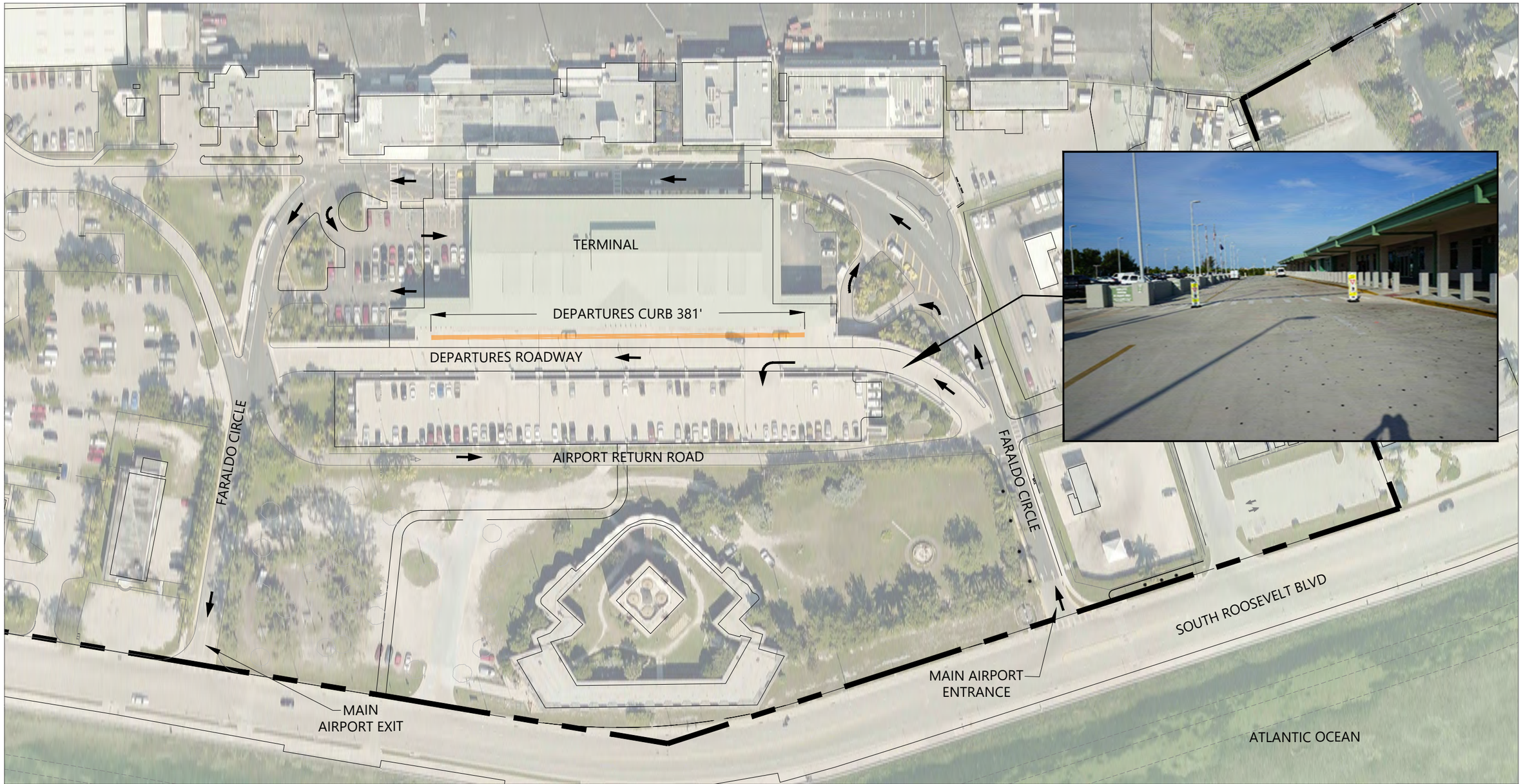
Thirteen vehicle curb spaces are provided for taxicabs to wait in line along the arrivals curbfront and on the south side of the arrivals roadway adjacent to the public parking garage. **Exhibits 2-14** and **2-15** depict the departures and arrivals roadways and associated curbfronts.

Arriving passengers being picked up by commercial vehicles, such as limousines, hotel vans, shuttles, or buses must walk approximately 150 feet from the arrivals terminal to a covered bus stop/waiting area, as depicted on **Exhibit 2-16**. Passengers must call ahead for commercial transportation other than taxicabs, as these vehicles are not allowed to wait at the bus stop.

2.4.2 ON-AIRPORT ROADWAYS

Main access to the Airport is provided via South Roosevelt Boulevard, which is a four-lane, undivided State Route (SR A1A). **Exhibit 2-17** illustrates roadways, and parking at the Airport. Faraldo Circle enters the Airport property at the southeast entrance as a two-lane, one-way roadway. Shortly after entering the Airport, the road splits to provide access to the departures terminal, automobile parking area, or the arrivals terminal. Drivers of vehicles carrying departing passengers turn left and up the ramp to the ticketing/check-in curbfront. Drivers of vehicles accessing parking or rental car returns or picking up arriving passengers remain to the right. This main loop provides access to all Airport areas, including the rental car facilities, the arrivals area, the departures area, the fixed base operator (FBO) facilities, FedEx, Airport Security, the Greyhound bus station, and airside access Gates 1 and 5.

Public transit service to the Airport is provided by the Blue and Green Routes of the City of Key West Transit System. Those traveling to or from the Airport via public transit access the bus at the covered bus stop a few steps from the arrivals terminal. The Blue Route runs clockwise around Key West and is the fastest bus accessing the tourist district around Duval Street. Buses on the Blue Route leave the Airport every 90 to 120 minutes and run from 7:03 a.m. to 8:39 p.m. The Green Route is a longer route and operates from 6:25 a.m. to 9:00 p.m. every 90 to 120 minutes. These buses operate 7 days a week.



SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., April, 2016.

EXHIBIT 2-14

NORTH 0 100 ft.

Departures Roadway and Curbfront

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-1□ De□ artures □ oadway and Curb□ront.dwgLayout: 11x17 Plotted: □un 11, 2020, 0□:22AM



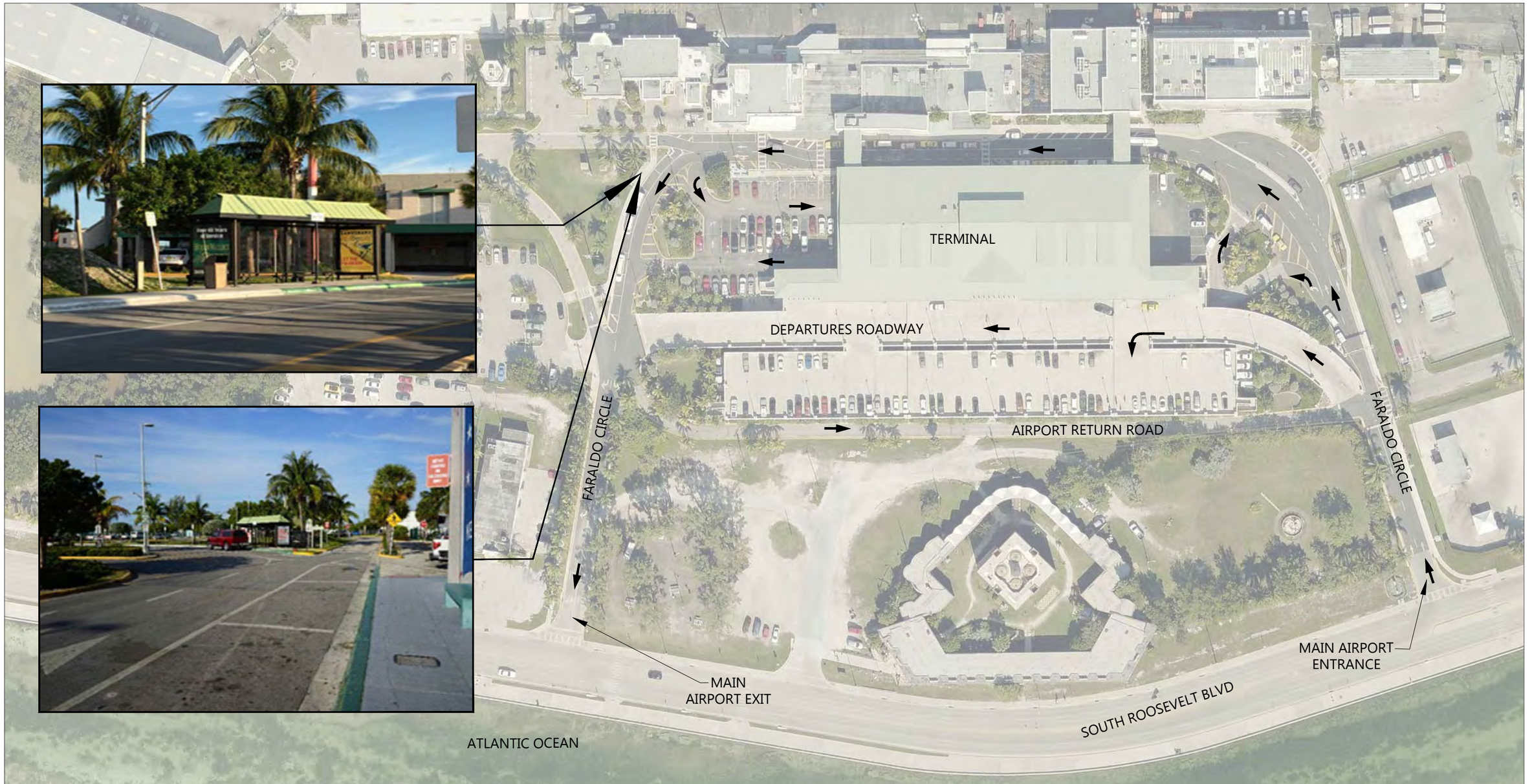
SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., April, 2016.

EXHIBIT 2-15

NORTH 0 100 ft.

Arrivals Roadway and Curbfront

Drawing: P:\Projects\Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory\ Existing Conditions\CAD\Exhibit 2-15 Arrivals Roadway and Curbfront.dwgLayout: 11x17 Plotted: Jun 22, 2018, 10:44AM



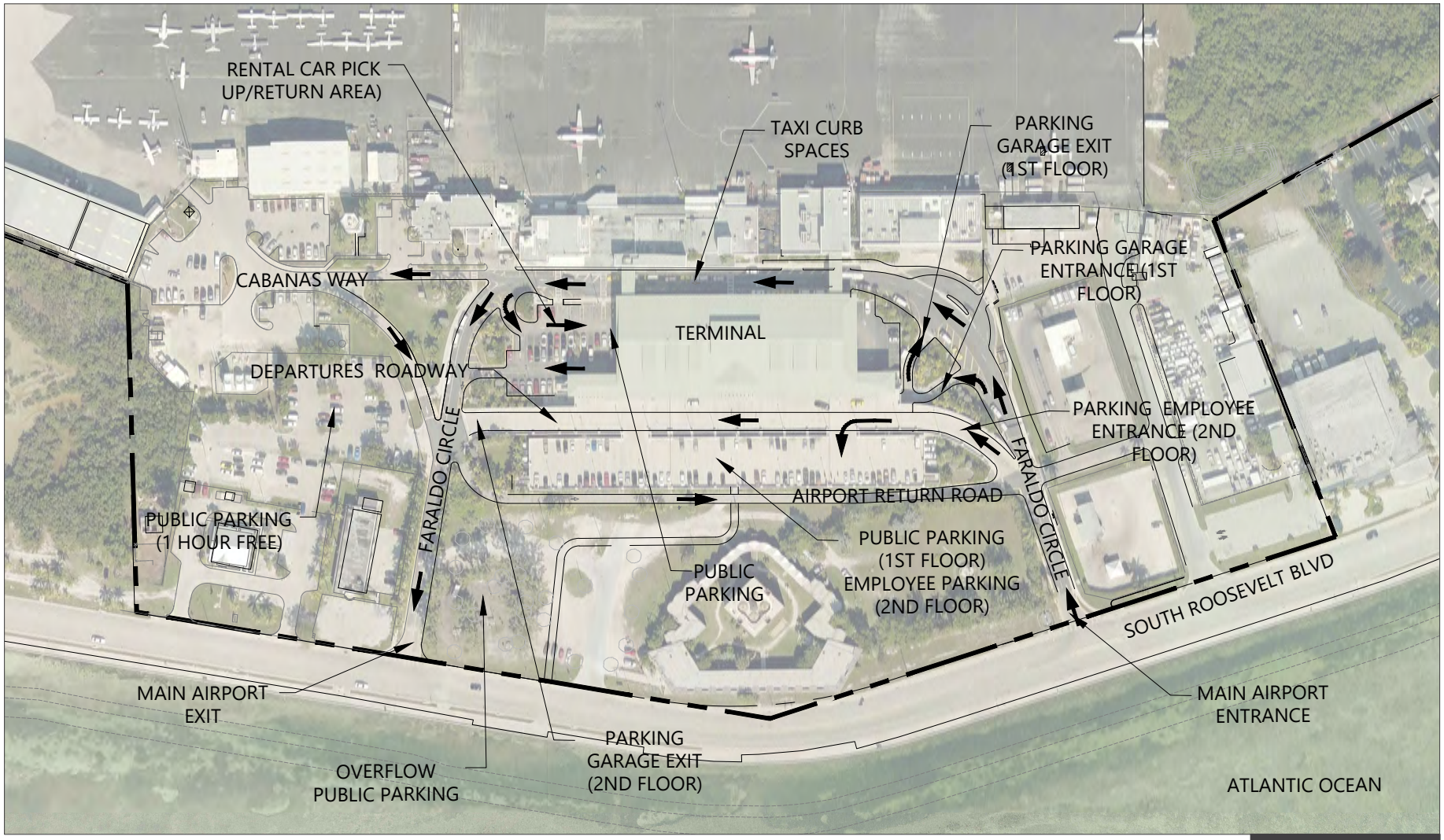
SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., April, 2016.

EXHIBIT 2-16

NORTH 0 100 ft.

Commercial Vehicle Pick Up Area

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-16 Commercial ehicle Pick U Area.dwgLayout: 11x17 Plotted: un 22, 201 , 10 AM



SOURCE: Basemap and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., April, 2016.

EXHIBIT 2-17

NORTH 0 150 ft.

Access and Parking

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-17 Access and Parking.dwgLayout: x11 Plotted: un 11, 2020, 0 :2 AM

In addition to the Key West public transit system, Greyhound provides bus transportation services to and from the Airport twice daily. The buses depart the Airport at approximately 8:15 a.m. and 5:45 p.m. and travel for 3.5 hours to Miami Cutler Bay. The bus route includes a single stop in Islamorada. The bus routes to Key West depart the Miami Cutler Bay station at approximately 1:10 p.m. and 6:30 p.m., travelling for 3 hours and 45 minutes back to the Airport. Passengers who use Greyhound are dropped off or picked up directly outside the Greyhound office located in the Annex building, a few steps from the arrivals terminal.

2.5 Automobile Parking

The primary public automobile parking areas at the Airport are provided in three locations, including the public parking garage, a surface lot, and grassed overflow parking. The two-floor parking garage located south of the main arrivals/departures terminal provides public and rental car parking on the ground floor, as well as employee parking on the second floor, south of the departures roadway. Both parking areas can be accessed from Faraldo Circle, as depicted on Exhibit 2-17.

According to the Airport staff, there is a need for additional parking, especially during high season and special Key West events held at different times throughout the year.

2.5.1 PUBLIC PARKING GARAGE

The public parking garage provides spaces for 150 public vehicles and 155 rental cars. In addition, an area is allocated for motorcycles and bicycles on the ground floor of the garage on the west side.

Exhibit 2-18 depicts the public garage entrance and exit. Drivers enter the garage by staying to the left on the arrivals roadway and proceed to the automated time/date stamped ticket machine. Signs are located throughout, directing drivers to parking areas.

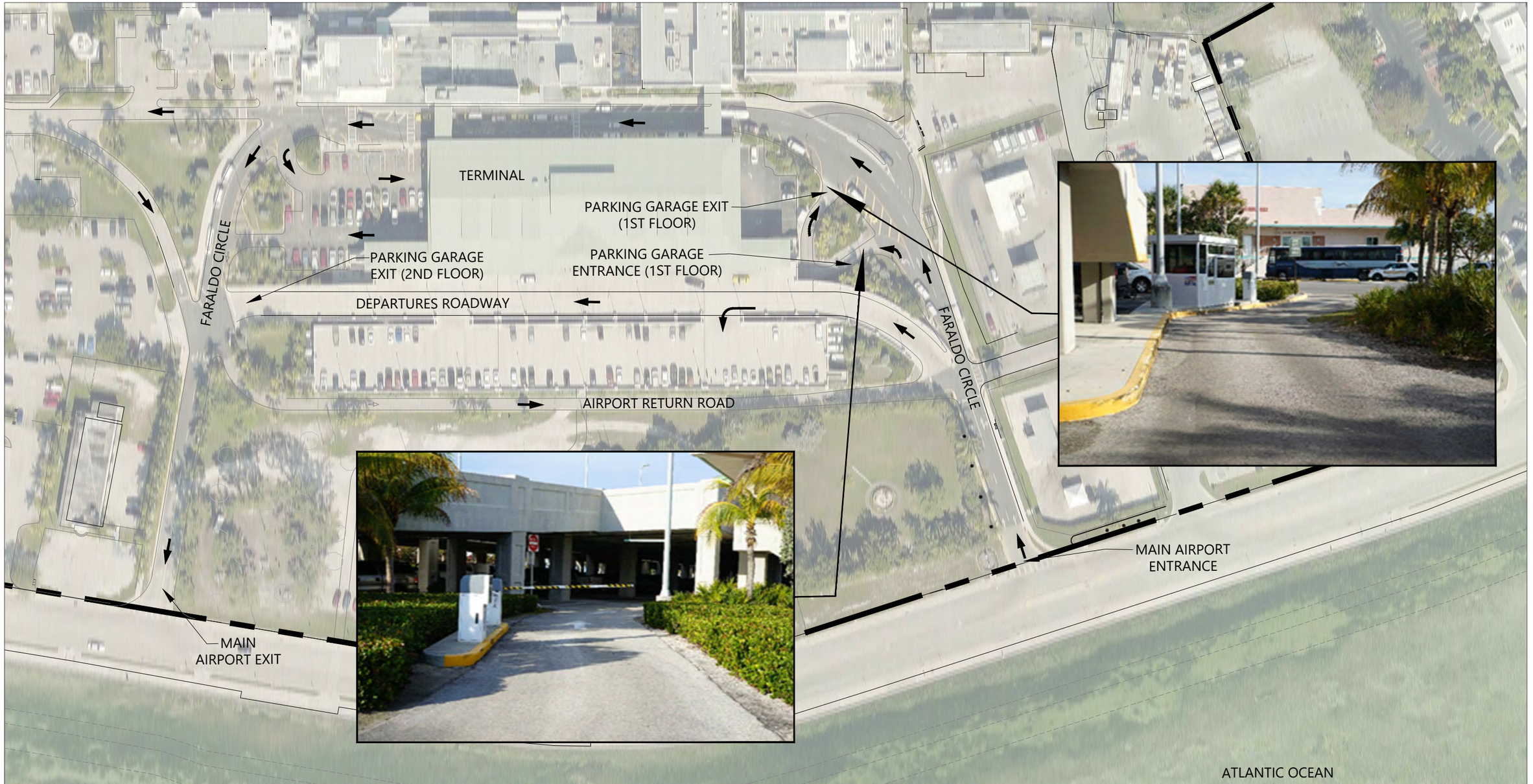
Drivers follow signs to exit the garage slightly north of the garage entrance, pay a parking fee, and then exit onto the arrivals roadway. The garage fee is handled by USA Parking, which collects the revenue generated from parking at the Airport. Fees are $1.00 for the first 30 minutes, $2.00 for 31-60 minutes, and $1.00 for each additional 30 minutes, up to $10.00 maximum for daily parking and $50.00 for weekly parking.

2.5.2 HOURLY SURFACE PARKING LOT

A one-hour free parking lot for drivers picking up passengers is provided in a small surface lot located west of the public parking garage with approximately 30 to 50 spaces available. **Exhibit 2-19** depicts the free one-hour parking lot designated for passenger pick-up only.

2.5.3 OVERFLOW SURFACE PARKING LOT

Overflow parking is provided as needed during high season or when special events are being held in Key West. The overflow lot is located within the grassed public park between the Airport exit and the Fort East Martello Museum.



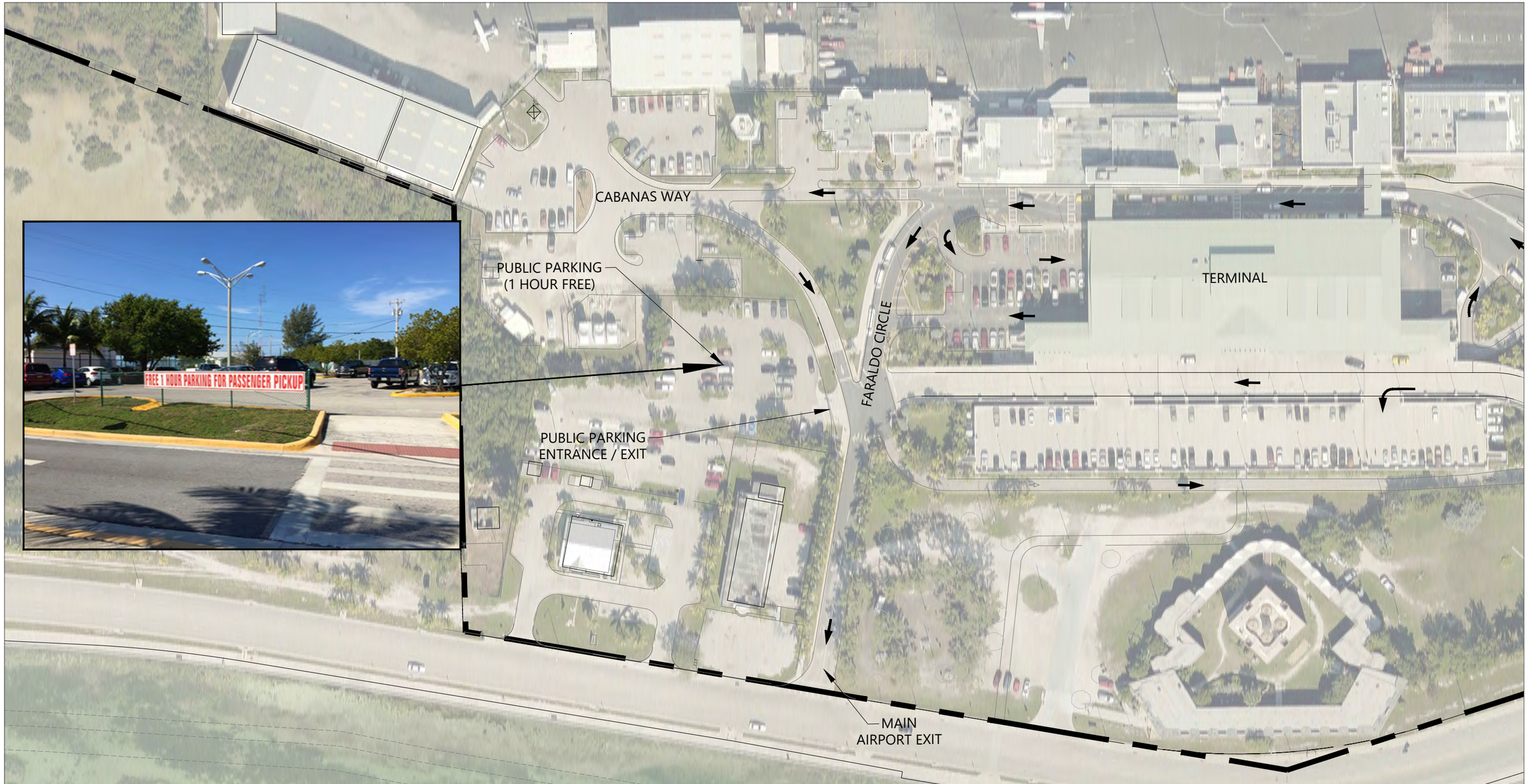
SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., April, 2016.

EXHIBIT 2-18

NORTH 0 100 ft.

Public Parking Garage Entrance/Exit

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-1 Public Parking arage Entrance-Exit.dwgLayout: 11x17 Plotted: un 11, 2020, 10:02AM



SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., April, 2016.

EXHIBIT 2-19

NORTH 0 100 ft.

One-Hour Parking Lot

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-19 One-Hour Parking Lot.dwgLayout: 11x17 Plotted: Jun 11, 2020, 10:10AM

2.5.5 EMPLOYEE PARKING LOT

The main employee parking lot is located on the upper level of the terminal building, outside and south of the departures roadway. There are 86 employee parking spaces available.

2.5.6 RENTAL CAR FACILITIES

The rental car facilities at the Airport include counter areas in the arrivals terminal, a pick-up/return area in the parking garage, and a rental car maintenance area. All rental cars are picked up and returned on the ground floor of the parking garage. Access to this area is provided from Faraldo Circle directly southwest of the arrivals exit.

Two rental car maintenance parcels are located northeast of the Airport entrance off South Roosevelt Boulevard. The northern parcel is operated by Avis Rent-A-Car System and the southern parcel is operated by Dollar Rent-A-Car and Thrifty Car Rental.

In 2012, The Hertz Corporation entered into a 20-year lease agreement with the County to use the former Key West Teen Center parcels located just south of the one-hour free parking lot. Hertz uses the property for rental car preparation and maintenance activities.

2.6 Air Cargo Facilities

Two cargo airlines operate at EYW, FedEx and Martinaire/UPS Air Cargo.

2.6.1 FEDEX OPERATIONS

FedEx operates Cessna 208 Caravan aircraft. FedEx pilots are contracted through Mountain Air. FedEx leases the air cargo building, which contains 2,973 square feet of space, from the County. In addition, FedEx leases 8,842 square feet of apron in front of the building and 9,535 square feet of land adjacent to the building for trucks, equipment storage, and vehicle parking. **Exhibit 2-20** presents a landside and airside view of FedEx and ramp area. FedEx trucks enter and exit the ramp area via Security Gate 1 located east of the Fedex building.

Entrances from the landside area provide access for employees based at the facility, as well as public access to the main counter for outbound deliveries and inbound pickup. There is an office for the FedEx manager, a breakroom for employees, and a warehouse area. The warehouse area of the cargo building is used to sort outbound packages in bins on tables. There are no belts of any type in use for sorting outbound cargo. Inbound cargo is offloaded directly from two aircraft to as many as 10 waiting trucks. Aircraft arrive from and depart to Fort Lauderdale-Hollywood International Airport. During the holiday season from Thanksgiving to Christmas, FedEx operates as many as four aircraft to accommodate the additional cargo.



SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., April, 2016.

EXHIBIT 2-20

NORTH 0 100 ft.

FedEx Facilities

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-20 edEx acilities.dwgLayout: 11x17 Plotted: un 11, 2020, 10:13AM

Future cargo that may result from Cuba will not affect FedEx operations at EYW. According to the FedEx Operations Manager at EYW, all cargo from Cuba is to be handled at Miami International Airport, as it is the company's Latin American base of operations. Therefore, at this point in time, FedEx does not foresee the need for any additional facilities at the Airport, landside or airside.

2.6.2 MARTINAIRE/UPS OPERATIONS

Martinaire conducts cargo operations into and out of EYW on behalf of UPS. Martinaire owns and operates one Cessna Caravan CE208B aircraft. The aircraft is based during the day on the GA ramp forward of Signature Flight Support facilities. Martinaire does not occupy any building space at EYW.

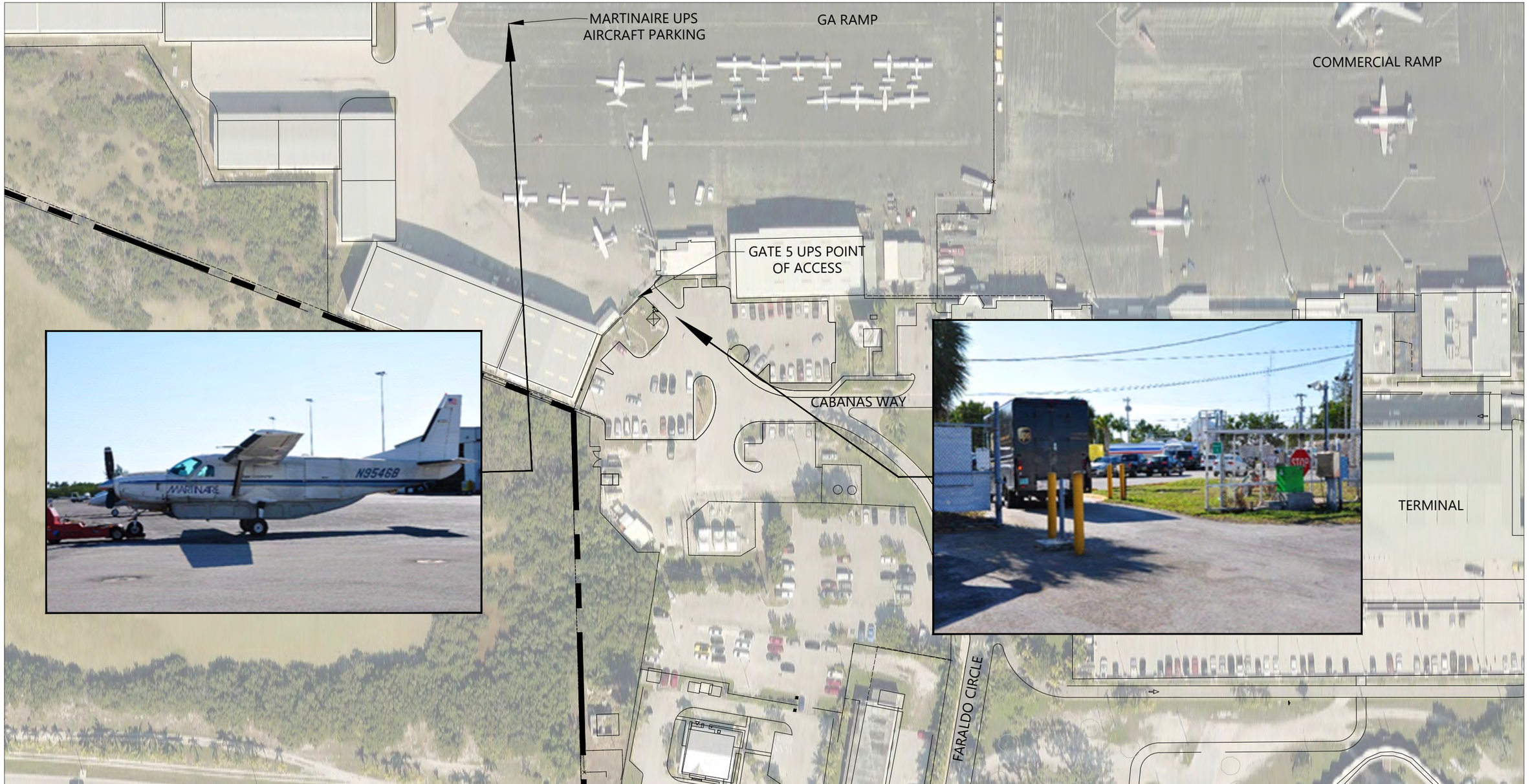
Martinaire departs to Miami International Airport with UPS' outbound cargo between 7:30 p.m. and 8:00 p.m., Monday through Friday. The airline arrives at EYW with inbound UPS cargo from Miami Tuesday through Saturday between 8:00 a.m. and 8:30 a.m. UPS trucks enter the ramp area through Gate 5 and proceed to the aircraft to load and offload cargo. The trucks then exit the ramp area through Gate 5. **Exhibit 2-21** provides an overview of the Martinaire Cessna Caravan and access to the ramp (Gate 5).

2.7 General Aviation Facilities

General aviation landside facilities support both based and itinerant aircraft operations at EYW. Components of general aviation landside facilities include FBO facilities; conventional, box, and T-hangars; apron areas; and automobile parking areas. GA consists of all flying activity with the exception of military and commercial service. GA users at EYW include individuals flying for business or personal reasons and aircraft maintenance. The locations of all GA facilities at EYW are illustrated on **Exhibit 2-22**.

2.7.1 FIXED BASE OPERATOR

Signature Flight Support is the sole FBO at EYW. Signature provides aviation fuel, aircraft ground handling, oxygen service, aircraft parking (ramp or tiedown), hangars, hangar leasing/sales, ground power units (GPUs), aircraft maintenance, and avionics sales and service. Signature Flight Support operates from two main buildings, including a small FBO office building, which has a footprint of approximately 2,200 square feet, and the FBO's maintenance hangar, which has a footprint of approximately 8,000 square feet. The hangar was constructed in 1994 and was refurbished in March 2015 to repair saltwater damage (as a result of flooding), rust, and corrosion, and to install a new roof. The FBO office (terminal) was constructed in 1988 and refurbished in 2013. It is in good condition, but the FBO is outgrowing the space. Both buildings are owned and operated by Signature Flight Support and the land is leased from the County.



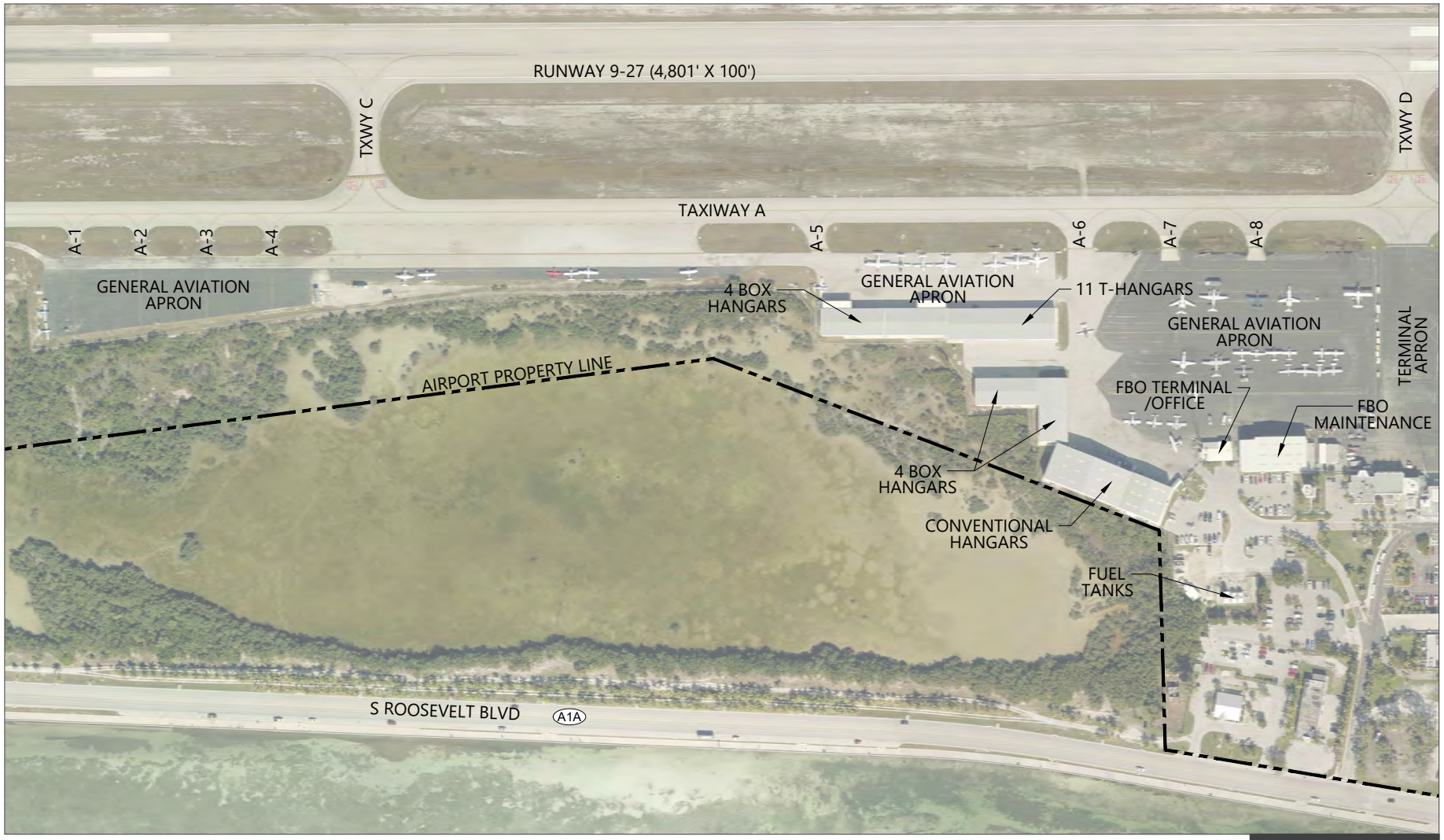
SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., April, 2016.

EXHIBIT 2-21

NORTH 0 100 ft.

Martinaire/UPS Air Cargo Operations

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-21 Martinaire Air Cargo O: erations.dwgLayout: 11x17 Plotted: un 11, 2020, 10:16AM



SOURCE: Basemap and Aerial Photography, Jacobs, September, 2015.
PREPARED BY: McFarland Johnson, April 2016.

EXHIBIT 2-22

NORTH 0 300 ft.

General Aviation Facilities

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-22 A acilities.dwgLayout: Pa er Plotted: un 11, 2020, 10:2 AM

The FBO facility includes the following amenities/space:

- Passenger lobby
- Pilot lounge
- Flight planning center
- Conference room/lounges
- Wireless Internet
- Workstations

Signature Flight Support signed a 20-year lease with Monroe County in January 2016 for several facilities at EYW, which include the entire main GA apron, FBO hangar, FBO office building, and one conventional hangar along the main GA apron. Signature Flight Support leases a larger conventional hangar from the Key West Hangar Association. Additionally, Signature leases the tiedowns in front of the box and T-hangars between Taxiways A5 and A6.

Signature Flight Support also has three fuel tanks and five fuel trucks at EYW. There are two 12,000-gallon Jet A fuel tanks and one 12,000-gallon 100LL tank. These tanks are located south of the FBO office and are not accessible from the airside. Three 5,000-gallon fuel trucks serve Jet A and two 1,000-gallon fuel trucks serve 100LL. In an average busy season (October through April), approximately 300,000 to 400,000 gallons of Jet A and 100LL are sold to GA and commercial operators.

2.7.2 AIRCRAFT RAMP

The main GA apron spans approximately 26,500 square yards and is located west of the terminal apron, south of Taxiway A, and between Taxiways A6 and D. It includes tiedown areas and access to conventional hangars. Tiedown areas can accommodate either 29 small aircraft or 16 small aircraft and 5 larger aircraft. The pavement of the main GA ramp is in poor condition, according to the 2015 Airfield Pavement Condition Index Rating, prepared by FDOT Airfield Pavement Management Program (refer to Exhibit 2-4).

Additionally, an apron parallel to Taxiway A between Taxiways A1 and A6 spans approximately 17,700 square yards and provides tiedown and access to T-hangars and small box hangars. This apron is split into three areas. The eastern two apron areas have satisfactory pavement conditions while the most western apron has fair pavement condition. The fair portion is located between Taxiways A1 and C. The easternmost portion of this apron, which is being leased by Signature Flight Support, has space for approximately 10 small aircraft tiedowns. The two apron areas west of Taxiway A5 have space for approximately 42 small aircraft and are lit by overhead lights.

2.7.3 AIRCRAFT STORAGE HANGARS

2.7.3.1 T-Hangars and Box Hangars

There are 11 nested T-hangars and 8 small box hangars in four buildings that are accessible from the main GA ramp or the apron west of Taxiway A6. These hangars were constructed in 2005 and are in good condition. The Key West Hangar Association owns the T-hangars and box hangars.

2.7.3.2 Conventional Hangars

Two large conventional hangars are located along the GA apron west of the FBO facilities and are owned by the Key West Hangar Association. Both of these hangars were constructed in 2005 and are in good condition. The larger hangar consists of approximately 12,000 square feet and is leased by Signature Flight Support. The smaller conventional hangar is approximately 6,200 square feet.

2.8 Airport/Airline Support Facilities

2.8.1 ADMINISTRATION OFFICES

The Airport Administration offices are located in the old terminal building complex, adjacent to and above the arrivals/baggage claim area. The offices are dated and in need of refurbishment or replacement. Some Airport Administration offices provide a view of the airside facilities. The departures holdroom/Gates 1 through 6 and the arrivals terminal can be accessed from these offices.

2.8.2 FUEL STORAGE FACILITIES

The fuel farm, depicted on **Exhibit 2-23**, is owned and operated by Signature Flight Support. It consists of three 12,000-gallon aboveground tanks. Two of these tanks contain Jet A fuel and the third contains 100LL fuel. The fuel farm includes three fueling racks that can be used simultaneously by five trucks. Three of the fuel trucks contain 5,000 gallons of Jet A fuel, while the remaining two trucks contain 1,000 gallons of 100LL fuel.

Exhibit 2-23: Fuel Farm



SOURCE: American Infrastructure Development, Inc. Data Collection Trip, March 2016.
PREPARED BY: American Infrastructure Development, Inc. April 2016

2.8.3 AIRCRAFT RESCUE AND FIREFIGHTING FACILITY

The ARFF index determination and equipment requirements for a commercial service airport are determined by the standards set forth in 14 CFR Part 139, *Certification of Airports*. As stated in 14 CFR Part 139.315, the ARFF index is determined by the length of the air carrier aircraft and the number of average daily departures of air carrier aircraft. EYW is an ARFF Index B airport, which includes aircraft at least 90 feet long but less than 126 feet long. The FAA conducts annual inspections to ensure that the Airport, personnel, and ARFF equipment comply with all 14 CFR Part 139 requirements.

The EYW ARFF facility, also referred to as the Monroe County Fire Rescue/Key West Station 7, provides fire suppression, emergency medical services, and ARFF services. The ARFF facility has 13 trained fire fighters with three or four firefighters on duty per shift, 24 hours per day/365 days per year.

The ARFF facility is located directly east of the ATCT and is depicted on **Exhibit 2-24**. The facility has three vehicle bays and is equipped with two ARFF vehicles, a quick response vehicle and a backup inspections vehicle. Vehicles carry water and aqueous film forming foam chemicals, as well as dry chemical fire retardants, such as Purple-K and nitrogen as the firefighting propellant, and halotron.

Exhibit 2-24: Aircraft Rescue and Firefighting Facility



SOURCE: American Infrastructure Development, Inc. Data Collection Trip, March 2016.
PREPARED BY: American Infrastructure Development, Inc. April 2016

Table 2-7 presents an inventory of EYW ARFF equipment and quantities of agents capable of being carried by that equipment.

EYW has five public access automated external defibrillators (AEDs) in addition to the AEDs carried on the response vehicles. The AED locations are:

- The departures check-in terminal, across from the Conch Flyer restaurant.
- The "sterile" side of the TSA screening area.
- The first column as one enters the departures terminal.
- On the far wall in the departures gate area near Last Call restaurant and bar.
- The arrivals terminal between the two baggage carousels.

Table 2-7: Aircraft Rescue and Firefighting Equipment

ARFF VEHICLE	WATER (GAL)	AFFF (GAL)	DRY CHEMICAL (POUNDS)	HALOTRON	PPK
ARFF 2007 Oshkosh Striker 4x4	1,500	210	500		
ARFF 107 1998 Oshkosh T-1500 4x4	1,500	210		500	
ARFF 207 2012 Ford F-350 4x4 Quick Response Vehicle	100	3			450
UTILITY 7 2008 Ford F-550 4x4 Back-up Inspection Vehicle	0	0	0	0	0

AFFF – Aqueous Film Forming Foam, PPK – Purple-K Fire extinguisher

SOURCE: S. Steves, Airport Operations and Security Manager, email 11/02/2015
PREPARED BY: American Infrastructure Development, Inc. April 2016

2.8.4 MONROE COUNTY SHERIFF'S OFFICE / AIRPORT SECURITY DIVISION

Security services at the Airport are provided under contract to the County by the Monroe County Sheriff's Office, Airport Security Division. The Monroe County Sheriff's Office is located in the Annex building. This building, constructed in 1997, also accommodates the CBP offices and the Greyhound bus station. The Sheriff's Office provides security for the Airport, as well as badging services for airside visitors. The Sheriff's Office contains offices, a breakroom, and a security office.

The Airport Security Division provides security at the Airport 24 hours per day, 7 days per week. Airport security technicians (ASTs) monitor cameras and computerized door access alarms in the Airport Security Department Control Room. Additional sheriff's deputies and ASTs are stationed at the fixed guard post between the general aviation and commercial ramp areas to check cargo and to check authorized access to the secure area of the commercial ramp during the main hours of operation. ASTs and deputies patrol the perimeter of the Airport, assist passengers when necessary and enforce the ground transportation rules of the Airport.

The Airport Security Division has six deputy sheriffs, 16 ASTs, and two deputy sheriff sergeant/supervisors, all under the authority of the Director of Airport Security.

2.8.5 U.S. CUSTOMS AND BORDER PROTECTION FACILITY

The U.S. CBP facility is housed within the Annex building. The CBP facility consists of 9,392 square feet of interior space for offices, a breakroom, and waiting areas, among other uses. The facility has access to a portion of the apron for aircraft inspections.

The existing EYW Customs facilities do not meet current Federal Inspection Services standards. The facility has the capacity to process GA/charter aircraft passengers entering the United States, but does not have the capacity needed to process passengers from commercial flights. Ten international passengers per hour can be processed at the facility. The County is in the process of expanding the Customs facility to upgrade it to

current standards. Specific upgrades include increasing the size of the facility to 14,754 square feet, expanding the hold room for up to 70 passengers from the existing 10 passenger maximum capacity, and increasing security, alarm systems, and other post-9/11 security enhancements.

The continued influx of aircraft from non-U.S. destinations in the Caribbean adds momentum for the modification of the Customs facilities. In September 2012, EYW was approved for passenger service to Cuba. Currently, Havana Air is the only airline providing service to Cuba, with three flights per week out of Key West. Havana Air uses a nine passenger turboprop aircraft. Airport management is expecting the number of flights to and from Cuba to increase as airline routes are approved by the FAA. Customs at EYW is open Monday through Saturday from 8:00 a.m. to 8:00 p.m. and closed on Sunday.

Exhibit 2-25 depicts an airside view of the CBP and the Monroe County Sheriff's Office, Airport Security Division.

Exhibit 2-25: Monroe County Sheriff's Office Airport Security Division and U.S. CBP



SOURCE: American Infrastructure Development, Inc. Data Collection Trip, March 2016
PREPARED BY: American Infrastructure Development, Inc. April 2016

2.8.6 FAA AIRPORT TRAFFIC CONTROL TOWER

The ATCT at EYW is located to the west of the ARFF building and is operational daily from 7:00 a.m. to 9:00 p.m. Six parking spaces are provided at this facility. The EYW ATCT is part of the FAA's contract tower program and is operated by RVA Robinson Aviation, Inc., with five employees. Interviews with the ATCT Manager indicated the need for renovations and upgrades to the ATCT facilities. **Exhibit 2-26** illustrates the EYW ATCT.

Exhibit 2-26: Airport Traffic Control Tower

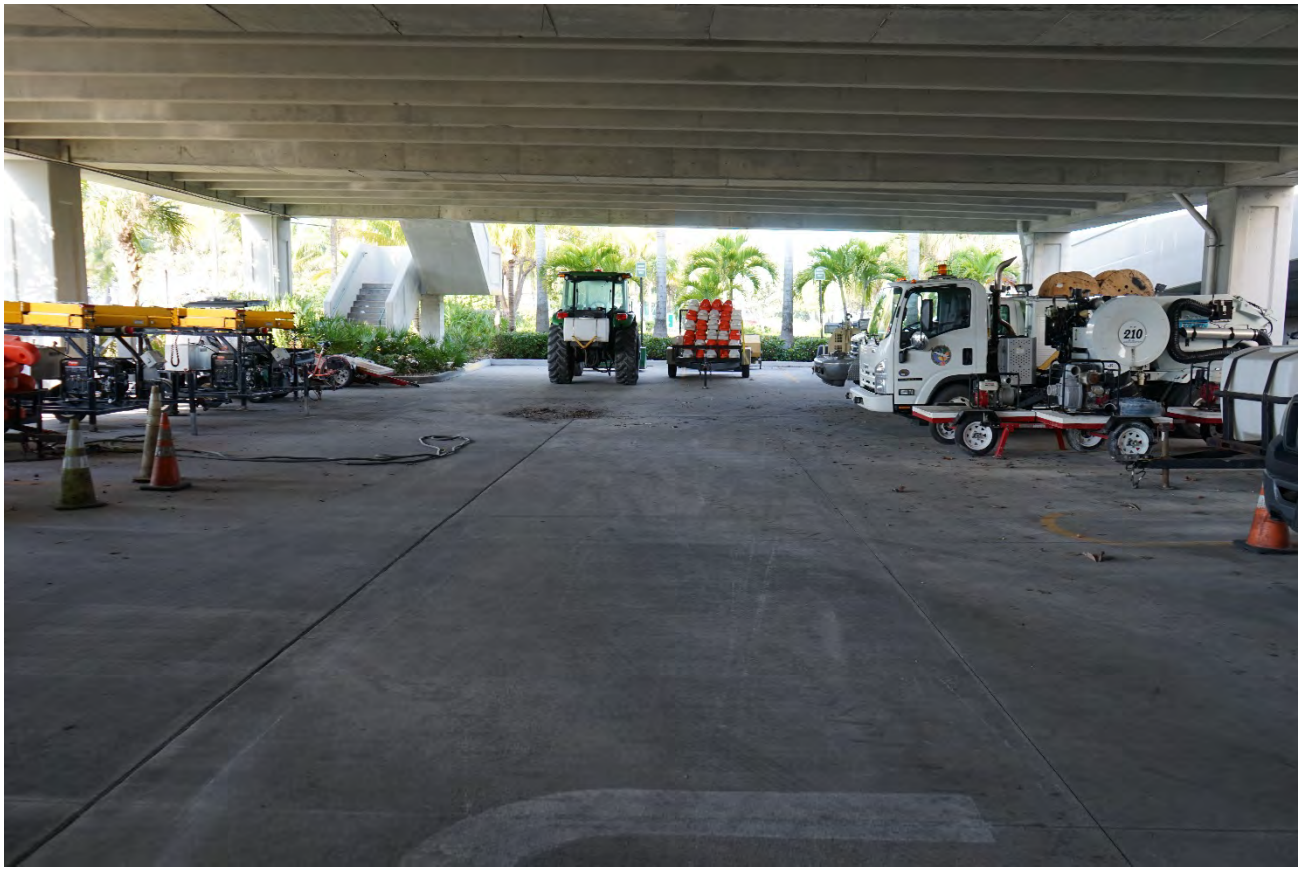


SOURCE: American Infrastructure Development, Inc. Data Collection Trip, March 2016.
PREPARED BY: American Infrastructure Development, Inc. April 2016

2.8.7 AIRPORT MAINTENANCE FACILITIES

Airport management has allotted an area in the lower southwestern corner of the terminal parking garage for the storage of Airport maintenance equipment. Equipment includes one airfield pickup truck, two County trucks, one sweeper, trailers, and miscellaneous cones and other equipment. Airfield mowing is contracted to private companies. **Exhibit 2-27** depicts the location of maintenance equipment.

Exhibit 2-27: Airport Maintenance Equipment and Storage Location



SOURCE: American Infrastructure Development Inc. Data Collection Trip, March 2016.
PREPARED BY: American Infrastructure Development, Inc. April 2016

2.9 Other Facilities

2.9.1 U.S. POSTAL SERVICE MAILBOX

The general public can drop off mail at a U.S. Postal Service (USPS) mailbox located outside and east of the arrivals terminal along Faraldo Circle**.** The USPS does not have any flights into or out of EYW. Mail is sorted at the main USPS facility in Key West and trucked via SR A1A.

2.9.2 AUTOMATED TELLER MACHINES

There are three automated teller machines located at the Airport, one in the ticket counter area of the terminal, one in the departure terminal/gate area, and one in baggage claim.

2.9.3 DRIVERS LICENSES AND MOTOR VEHICLE SERVICE CENTER

The Florida Department of Highway Safety and Motor Vehicles leases a building on the Airport for issuing drivers' licenses. The building is located at 3439 South Roosevelt Boulevard and can only be accessed from this road. The building was formerly referred to as the Florida Highway Patrol Building.

2.9.4 MONROE COUNTY DEPARTMENT OF PUBLIC WORKS YARD

The Department of Public Works yard is located east of the Avis and Budget vehicle maintenance and preparation lease areas. The County leases a total of 50,387 square feet of the property from the Airport enterprise. According to the lease, of the 50,387 square feet leased, 25,193 square feet are dedicated to the Road Department, 12,597 square feet are dedicated to fleet management, and 12,597 square feet are provided for facilities maintenance.

2.9.5 EAST MARTELLO TOWER

The east Martello Tower is located on 2.7 acres near the entrance to the Airport at 3501 South Roosevelt Boulevard. It is a publicly owned historic site and is located on Airport property. The property is leased from the County by the Key West Art and Historical Society. It houses a museum containing historical records, military memorabilia, and other local artifacts.

2.9.6 THE "PINES" PARK

The "Pines" is a small public park owned by the County and located on approximately 1 acre of Airport property. The park provides unpaved space for vehicle parking and concrete benches and tables for picnicking under several large Australian pine trees. The park is open from 7:00 a.m. to 11:00 p.m. daily.

2.10 On- and Off-Airport Land Uses

Existing land use mapping, aerial photography, comprehensive plans, and other documentation pertaining to current and future land use in the vicinity of the Airport (up to 1 mile from the Airport property boundary) was reviewed. Existing zoning districts were also reviewed to determine locations where potential incompatible land uses could be developed. Further, local planning agencies were contacted to obtain their future land use or zoning plans and to identify the potential for future residential, commercial, and industrial development in the vicinity of the Airport.

2.10.1 EXISTING ON-AIRPORT LAND USES

The following land uses are present on the Airport, as shown in the 2003 EYW On-Airport Land Use Plan:

- **Airfield:** This land use encompasses all movement areas of the Airport, including runways, taxiways, and respective object free areas.
- **Aviation Related Development:** This land use encompasses the ramp area near Taxiways A1 through A4, the T-hangar and box hangar units, and the terminal ramp, building, parking lots, and rental car facilities.

- **Non-Aviation Related Development:** This land use encompasses a small area near the terminal and includes the Florida Drivers' License office and a vacant building.
- **Community Facilities:** Community facilities are located south of the terminal area and include a public park and the historic Fort East Martello Museum.
- **Environmental Use:** These land uses generally correspond with the conservation area and include the salt ponds, mangroves, and other vegetation around the Airport.

The existing on-Airport land uses are illustrated on **Exhibit 2-28**.

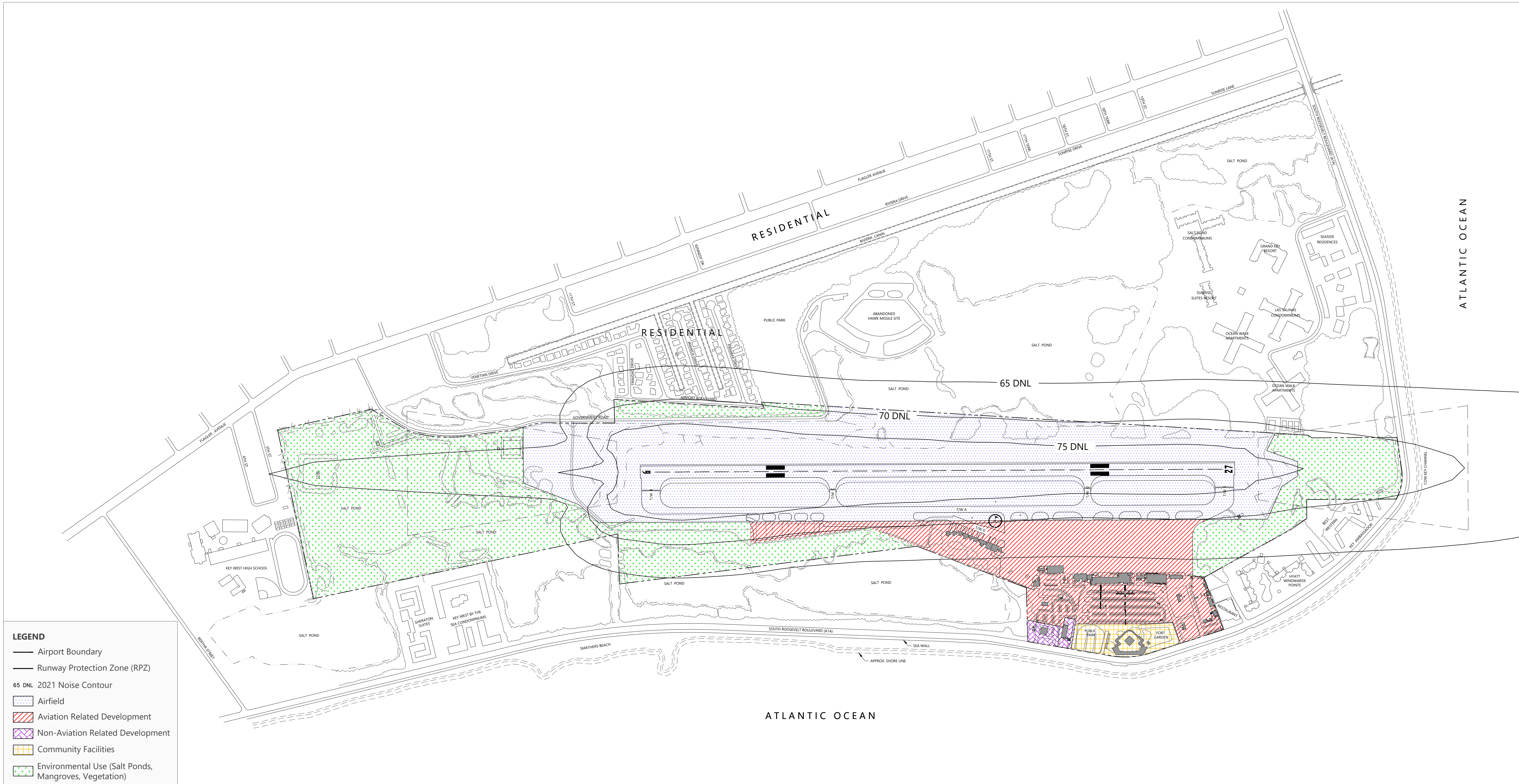
2.10.2 EXISTING OFF-AIRPORT LAND USES AND ZONING

It is important to identify the local land use and zoning restrictions and potential conflicts to the existing conditions as well as any proposed uses or development in an airport vicinity. Land use defines the type of activity that occurs on a parcel, such as natural areas (wildlife habitats, wetlands, coastal regions, conservation areas, etc.), working landscapes (farms, forests, recreation areas, mineral extraction lands, etc.), and constructed areas (residential, commercial, industrial, public space, etc.). Zoning ordinances, on the other hand, are meant to separate potentially conflicting land uses.

2.10.2.1 Existing Off-Airport and Uses

Existing land uses around the Airport, based on the 2013 14 CFR Part 150 Noise Compatibility Study, include the following, as shown on **Exhibit 2-29**:

- **Airport:** The entire Airport property is within this land use.
- **Mobile Homes:** Mobile homes and recreational vehicles are located approximately 0.75 mile north of Runway 9.
- **Single Family Residential:** Most of the residential area north and west of the Airport is in this category. Single family residential properties are located within the area exposed to aircraft noise of 65 to 70 decibels (dB) , some of which were deemed incompatible land use in the 2013 Part 150 Noise Study.
- **Multi-Family Residential:** This land use includes condominiums north of the Runway 27 approach area and south of the Runway 9 approach area. Some of these areas are located within the area exposed to aircraft noise of 65 to 70 dB and were deemed incompatible land use in the 2013 Part 150 Noise Study.
- **Transient Residential:** This land use includes hotels south of the Runway 27 approach areas. Some of these areas are located within the area exposed to aircraft noise of 65 to 70 dB and were deemed incompatible land use in the 2013 Part 150 Noise Study.



SOURCE: Basemap, 2003 Airport Layout Plan, URS, Inc.
PREPARED BY: American Infrastructure Development, Inc., March, 2016.

EXHIBIT 2-28

NORTH 0 800 ft.

Existing On-Airport Land Use Plan (2003)

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-2 Existing On-Air ort Land Use Plan 2003.dwgLayout: Layout1 Plotted: un 11, 2020, 10:27AM



SOURCE: KWIA Noise Exposure Maps, 2013
PREPARED BY: McFarland Johnson, Inc., March, 2016.

EXHIBIT 2-29

NORTH 0 2,400 ft.

Existing Off-Airport Land Use Map (2013)

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-29 & 31 - Land Use Ma s.dwgLayout: Existing Plotted: un 11, 2020, 10:30AM

- **Commercial:** These properties include the restaurants south of the Runway 27 threshold and sporadic parcels throughout the area. A large set of Commercial properties are also located in areas along the north side of the island along North Roosevelt Boulevard and Northside Drive.
- **Industrial:** There are few industrial parcels in proximity of the Airport.
- **Institutional:** These areas are within the approach area of Runway 9, beyond the wetlands area and associated with local schools, which are considered institutional use. Additionally, a few small parcels of institutional land use are located north of the Runway 9 approach area associated with Grace Lutheran School and religious institutions.
- **Recreational:** These areas are located north and south of the Airport associated with the wetlands, parks, and wildlife refuge.
- **Vacant:** These land uses are along the coast of the island, north and south of the Runway 27 threshold, and other small parcels are sporadically located throughout the area.
- **Miscellaneous:** This land use includes sporadic parcels throughout the island.
- **Transportation/Utility/Rights-of-Way:** This land use includes large roads and sporadic parcels throughout the island.

The existing adjacent land uses are compatible with the Airport and its current operations.

2.10.2.2 Existing Off-Airport Zoning

The City of Key West created an official zoning map in 2004. This map shows that, within 1 mile of the runway ends, the following zoning types are located, as shown on **Exhibit 2-30**:

- A – Airport
- C-FW – Conservation – Freshwater Wetlands
- C-OW – Conservation – Outstanding Waters of the State
- C-TW – Conservation – Tidal Wetlands of the State
- C-UH – Conservation – Upland Hammock
- CL – Limited Commercial
- CT – Salt Pond Commercial Tourist
- LDR-C – Coastal Low Density Residential
- M – Military
- MDR – Medium Density Residential
- MDR-1 – Medium Density Residential 1
- MDR-C – Coastal Medium Density Residential
- PS – Public Services
- RO – Residential/Office

- SF – Single Family

Additionally, the entire Airport property is located within the Category 1 Storm Surge Area (coastal high hazard area), which puts it at risk of flooding during extreme weather conditions, rising ocean levels, and storms common to the area (especially during hurricane season).

2.10.2.3 Air Installation Compatible Use Zones

Of additional note and consideration is the Air Installation Compatible Use Zones (AICUZ) for NAS Key West - Boca Chica Field located approximately 4 nautical miles northeast of the Airport. The following areas, as identified in the AICUZ, extend onto Airport property:

- **Noise Zone 2:** This zone encompasses 65 to 75 dB day-night average sound levels (DNLs). This zone extends east of the terminal and Runway 27.
- **AICUZ Footprint:** This zone is defined by the 2007 AICUZ Update for NAS Key West. It covers approximately the eastern half of EYW.
- **55 DNL:** This zone encompasses the 55 dB DNLs. Almost the entire Airport property is encompassed by this zoning.

These zones do not affect the Airport. The hotels and businesses located south and east of the Airport may be affected by Noise Zone 2. If the zoning in this area ever changes, aviation-related businesses and zoning/land uses may be a better fit for the area. None of the Accident Potential Zones for NAS Key West extend onto Airport property.



Official Zoning Map of the City of Key West, Florida

Legend

A	Airport	**HHDR**	Historic High Density Residential	**MDR**	Medium Density Residential
C-FW	Conservation- Freshwater Wetlands	**HMDR**	Historic Medium Density Residential	**MDR-1**	Medium Density Residential 1
C-OW	Conservation- Outstanding Waters of the State	**HNC (1 - 3)**	Historic Neighborhood Commercial 1 - 3	**MDR-C**	Coastal Medium Density Residential
C-TW	Conservation- Tidal Wetlands of the State	**HPRD**	Historic Planned Redevelopment and Development District	**PRD**	Planned Redevelopment and Development District
C-UH	Conservation- Upland Hammock	**HPS**	Historic Public and Semi-public Services	**PS**	Public Services
CG	General Commercial	**HPS (1 & 2)**	Historic Public and Semi-public Services 1 & 2	**RO**	Residential / Office
CL	Limited Commercial	**HRCC**	Historic Residential Commercial Core	**SF**	Single Family
CM	Conservation- Mangrove	**HRCC (1 - 4)**	Historic Residential Commercial Core 1-4		SF Special, Ordinances 122-236 and 122-238
CT	Salt Pond Commercial Tourist	**HRO**	Historic Residential / Office		
HCL	Historic Limited Commercial	**LDR-C**	Coastal Low Density Residential		
HCT	Historic Commercial Tourist	**M**	Military		
HDR	High Density Residential				

Zoning delinations based on Future Land Use Map (FLUM).

Original map created by D. Sullins Stewart with the City of Key West Planning Department dated 1993.

1996 Revisions provided by the City of Key West Planning Department.

FLUM adopted as zoning map by ordinance 97-10, July 3, 1997.

2004 Revisions provided by the City of Key West Planning Department based on ordinances 99-18, 00-14, and 03-04.

Base map provided by the Monroe County Property Appraiser.

Parcel map updated on: June 24, 2004

Plot prepared on: December 14, 2004

THIS PROPERTY LOCATION MAP HAS BEEN COMPILED FOR INTERNAL OFFICE USE AS AN AID IN THE PREPARATION OF THE MONROE COUNTY TAX ROLL. IT IS NOT A SURVEY AND THE OWNERSHIP INFORMATION DEPICTED THEREON SHOULD NOT BE RELIED UPON FOR TITLE PURPOSES. NEITHER THE CITY OF KEY WEST NOR THE OFFICE OF THE PROPERTY APPRAISER ASSUMES RESPONSIBILITY FOR ANY ERRORS OR OMISSIONS.

Attested:

See Key West City Clerk's Office for Official Version

Ty Symroski, City Planner — Date

Revisions:

1. _____ _____
2. _____ _____
3. _____ _____
4. _____ _____
5. _____ _____



SOURCE: Basemap, Jacobs, September 2015.
PREPARED BY: McFarland Johnson, Inc., April, 2016.

EXHIBIT 2-30

NORTH 0 2,800 ft.

Existing Off-Airport Zoning Map

2.10.3 FUTURE OFF-AIRPORT LAND USES AND ZONING

2.10.3.1 Future Off-Airport Land Uses

The following land uses types, in accordance with the Future Land Use Map presented in the *Key West Comprehensive Plan*, are located within 1 mile of the runway ends at EYW:

- **Low Density Residential:** This land use consists of a maximum of one dwelling unit per acre. These land uses occur mostly west and north of the Airport and include one small area east of the Airport.
- **Medium Density Residential:** This land use consists of a maximum of eight dwelling units per acre. These land uses occur mostly north of the Airport, but small areas also occur west, southwest, and northeast of the Airport.
- **High Density Residential:** This land use consists of a maximum of 16 to 22 dwelling units per acre, depending on the subtype of high-density residential use. Two small areas of this land use are located north of the Airport and one area is immediately northeast of the Runway 27 threshold.
- **General Commercial:** This land use consists of a maximum of 16 dwelling units per acre and can either be motels, some tourist facilities, public schools, general retail and sales, highway oriented sales and services, and other commercial activities. Certain residential uses are allowed. General commercial areas are located southeast of the Airport (east of the terminal facility), two small areas are located west of the Airport, and most of these land uses are located north of the Airport along the North Roosevelt Boulevard waterfront.
- **Public Service:** This land use consists of areas associated with EYW and allowable public and semi-public facilities and other similar activities. FAA regulations govern placement and specifications of structures within this land use.
- **Conservation:** This land use consists of a maximum of one dwelling unit per 10 acres and site alteration is limited to 10 percent of the entire site. Conservation areas are mostly east, north, and south of the airfield, on and off Airport property.
- **Military:** Military uses consist of any area under military jurisdiction. Two small military parcels are located within 1 mile of the Airport on the northeastern tip of and the beginning of the bridge to Dredgers Island north of Key West.

Land uses surrounding EYW are consistent with the applicable zoning regulations in place. One of the constraining factors is the location of conservation areas on all sides of the Airport. The future land uses are illustrated on **Exhibit 2-31**.

2.10.3.2 Future Off-Airport Zoning

There is currently no future zoning map, but the City of Key West is in the process of developing a future zoning map. It is anticipated that this map will consolidate the number of zones and will be made available in the future.



SOURCE: Basemap, Jacobs, September 2015.
PREPARED BY: McFarland Johnson, Inc., March, 2016.

EXHIBIT 2-31

NORTH 0 2,400 ft.

Future Off-Airport Land Use Map (2030)

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-29 & 31 - Land Use Ma s.dwgLayout: uture Plotted: un 11, 2020, 10:29AM

2.11 Inventory of Lease Documents

An inventory of existing leaseholds was obtained from Airport staff. **Tables 2-8** and **2-9** and **Exhibits 2-32** and **2-33** summarize the lease information obtained to date.

Table 2-8: Airport Leaseholds

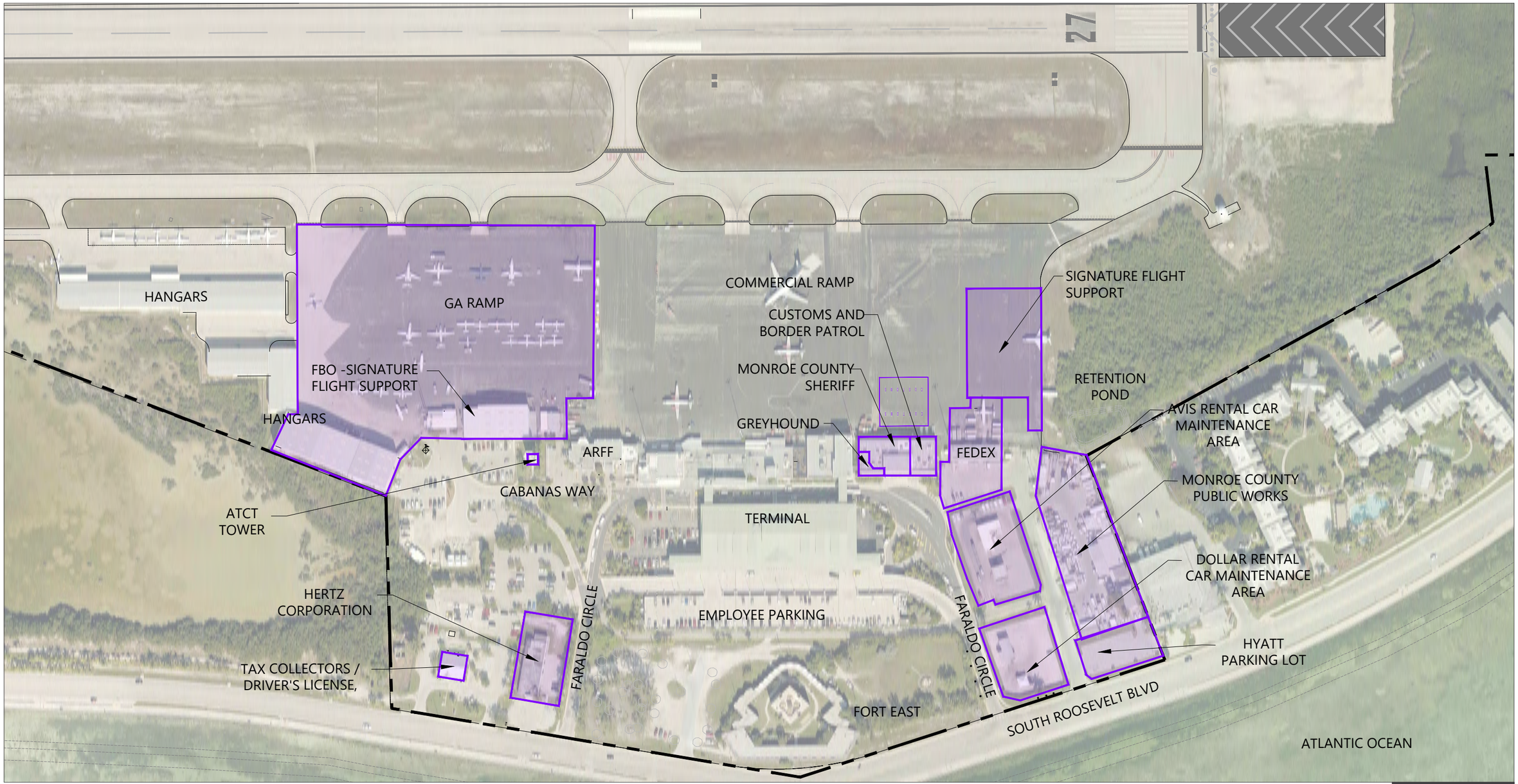
DESCRIPTION	SQ. FT.	LEASED TO
Avis Maintenance Area	29,100	Avis Rent A Car System
Dollar Maintenance Area	22,688	Dollar Rent A Car
Monroe County Sheriff's Office	7,748	Monroe County Sheriff
Customs Pavement	9,987	U.S. Customs and Border Protection
Florida Highway Patrol/Drivers' License	2,592	Tax Collector's Office
Airport Traffic Control Tower	454	FAA
Air Cargo Building	2,973	FedEx
Aircraft Apron	8,842	FedEx
Parking Lot	9,235	FedEx
Former Florida Keys Youth Center	18,800	The Hertz Corporation
Parking Lot	14,850	Hyatt and Hyatt Inc.
FBO - Signature Building and Ramp	283,568	Piedmont Hawthorne Aviation, LLC
Greyhound Lines Inc.	1,340	Greyhound Lines Inc.
Monroe County Public Works	49,715	Monroe County
Customs and Border Protection space	4,247	U.S. Customs and Border Protection

SOURCE: Airport Lease Documents
PREPARED BY: American Infrastructure Development, Inc., and Jacobs Engineering Group Inc. April 2016.

Table 2-9: Terminal Leaseholds

AREA	DESCRIPTION	SQ. FT.	LEASED TO
101	Counter Space	328	Hertz Rent a Car
102	Counter Space	220	Dollar Rent A Car
103	Counter Space	221	Thrifty Car Rental
104	Counter Space	320	Budget/Avis Rent A Car System
118	Departure Gate	235	Delta Air Lines
120	Departure Gate	235	Silver Airways
121	Departure Gate #5	298	American Airlines
123	Gift Shop	370	Last Chance
133	Office Space	172	American Eagle
134	Office Space	172	Delta Air Lines
135	Office Space	168	Silver Airways
138	Baggage Claim	37	Silver Airways
140	Baggage Claim	37	Delta Air Lines
141	Baggage Claim	37	American Airlines
143	Dining Room, Cocktail Lounge	1863	Conch Flyer
144	Conch Flyer Restaurant	1920	Conch Flyer
144A	Kitchen, Storage and Prep Area	508	Conch Flyer
200-1	Ticketing and Queue	304	American Airlines
200-2	Ticketing and Queue	304	American Airlines
200-3	Ticketing and Queue	304	American Airlines
200-4	Ticketing and Queue	304	Delta Air Lines
200-5	Ticketing and Queue	304	Delta Air Lines
200-11	Ticketing and Queue	304	Silver Airways
205	Office Space	108	TSA
216	Restaurant Vestibule	431	Conch Flyer
217	Retail	440	Jet Lag
218	Office Space	452	TSA
219	Kitchen, Storage and Prep Area	865	Conch Flyer
200-1	Ticketing and Queue	304	American Airlines
220	Gift Shop	498	Last Chance
221	Conch Flyer Restaurant	1963	Conch Flyer
221A	Restaurant Bar	940	Conch Flyer
221B	Restaurant Office	116	Conch Flyer
223	Office Space	161	American Eagle
223-A	Office Space	32	American Eagle
126	Rental Space	141	Available (7'-8" x 18'-6")
223-B	Office Space	18	American Eagle
223-C	Office Space	104	American Eagle
223-D	Office Space	99	American Eagle
224	Office Space	161	Delta Air Lines
224-A	Office Space	31	Delta Air Lines
224-B	Office Space	99	Delta Air Lines
224-C	Office Space	124	Delta Air Lines
228-A	Office Space	70	Silver Airways
228-B	Office Space	108	Silver Airways

SOURCE: Jacobs Engineering Group Inc., *2014 Master Terminal Space Allocation for Rates and Charges*
PREPARED BY: American Infrastructure Inc. and Jacobs Engineering Group Inc. April 2016



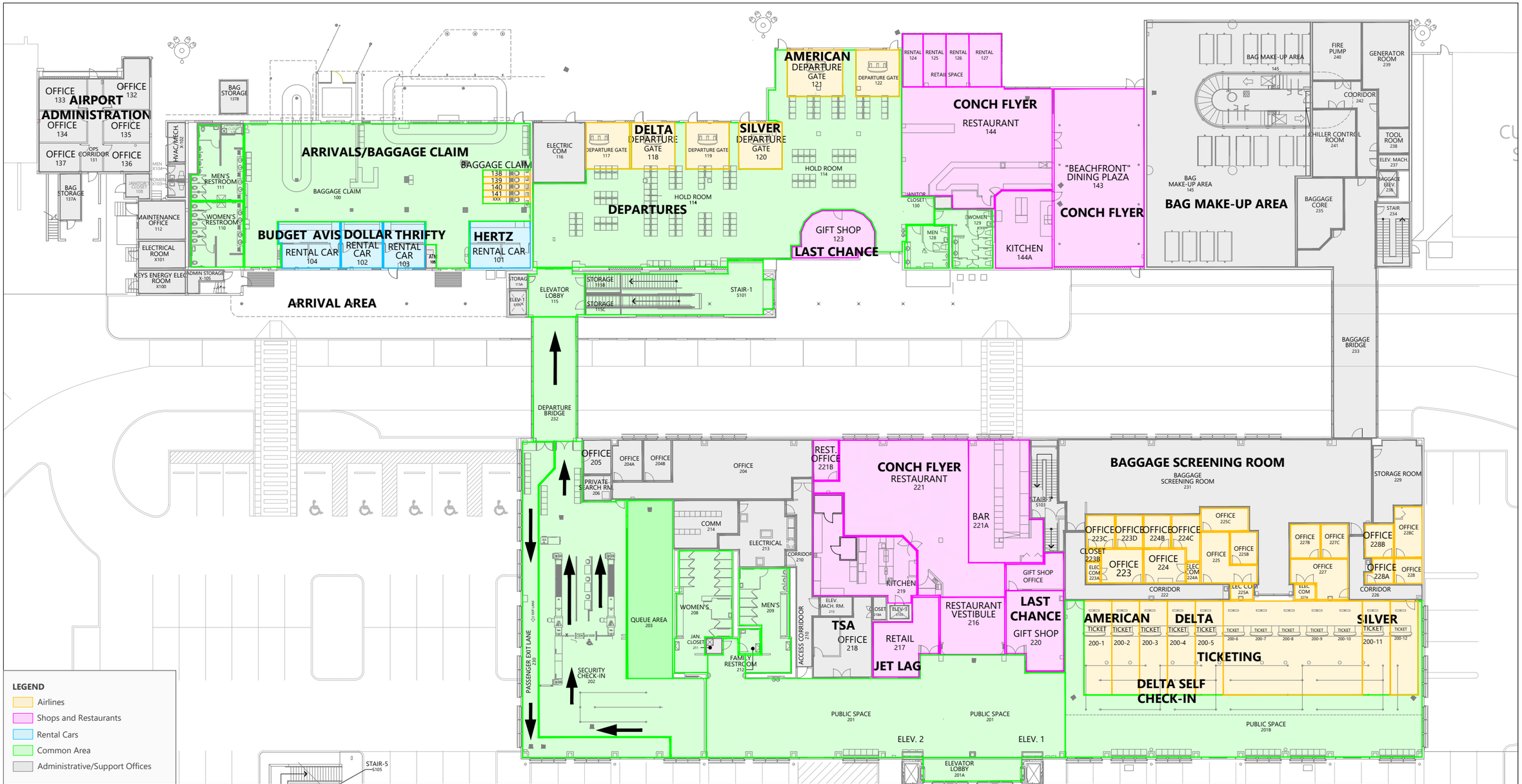
SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015. Lease Details, Airport Administration, March 2016.
PREPARED BY: American Infrastructure Development, Inc., March, 2016.

EXHIBIT 2-32

NORTH 0 200 ft.

Airport Leaseholds

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-32 Airport Leaseholds.dwgLayout: 11x17L Plotted: June 11, 2020, 10:03AM



SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., April, 2016.

EXHIBIT 2-33

NORTH 0 30 ft.

Terminal Leaseholds

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\203- Inventory & Existing Conditions\CAD\Exhibit 2-33 Terminal Leaseholds.dwgLayout: 11 17 Plotted: un 11, 2020, 10 AM

2.12 Environmental Setting

The following sections describe the existing environmental conditions at the Airport. The most significant environmental elements at EYW are the wetlands, threatened and endangered species, and floodplains.

2.12.1 WETLANDS

A major limiting factor to expansion of the Airport is the surrounding wetlands. The wetlands are characterized by a combination of salt ponds and mangrove marshes. Some of the wetlands are tidally influenced as the result of a direct connection to the Atlantic Ocean, while others are isolated and fluctuate with rainfall.[3]

Development within the wetland areas is limited because of stringent permit requirements of the U.S. Army Corps of Engineers, the South Florida Water Management District, and the Florida Department of Environmental Protection. Mitigation is required for any impacts to these wetlands. However, a consent order discussed in the 2003 Key West International Airport Master Plan Update, prepared by URS, permits the trimming of mangroves within the approach surface of Runway 27 and the runway object free area[4].

2.12.2 THREATENED AND ENDANGERED SPECIES

Federally "listed" species are those that are categorized as "endangered" or "threatened," as determined by the stipulations of the Endangered Species Act. They include both animal and plant species. The U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service are responsible for their protection. Those listed species identified in and around Airport property are provided in **Appendix B**.

In accordance with the 2007 Environmental Assessment for Proposed Runway Safety Area Improvements at the Key West International Airport, prepared by Monroe County Board of County Commissioners and URS Corporation Southern, the U.S. FWS had not listed the area surrounding Runway 9-27 as a potential habitat for any federally listed threatened or endangered species in the U.S. FWS Geographic Information System (GIS) database. According to the U.S. FWS, the disturbed nature and location of the Airport land surrounding the runway preclude its use as a habitat by any threatened or endangered species[5].

2.12.3 FLOODPLAINS

The floodplains at EYW are a major impediment to future expansion of the Airport. According to the Federal Emergency Management Agency's Flood Insurance Rate Maps, the southern portion of the Airport is classified

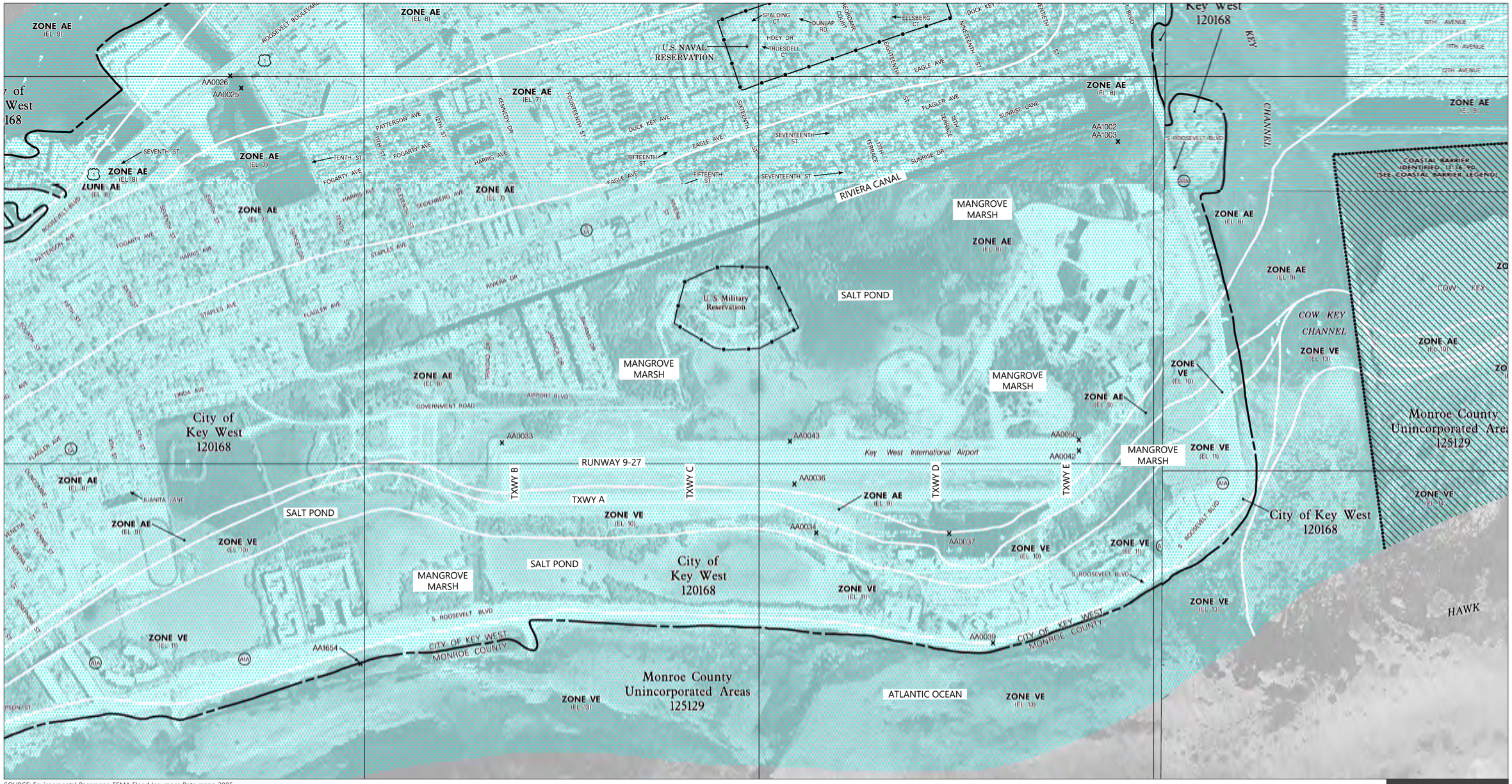
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3 Source: *Monroe County Board of County Commissioners and URS Corporation Southern, Environmental Assessment for Proposed Runway Safety Area Improvements at the Key West International Airport*, 2007.

4 Source: *URS, Key West International Airport Master Plan Update*, 2003

5 Source: *Monroe County Board of County Commissioners and URS Corporation Southern, Environmental Assessment for Proposed Runway Safety Area Improvements at the Key West International Airport*, 2007.

as zone VE (coastal flood zone with velocity hazard), while the northern half of the Airport and the majority of the airside are classified as zone AE (base flood zone elevations determined). Both of these zones are at risk of a 100-year flood (1 percent annual chance,) but zone VE is also at risk of velocity related hazards, including storm surge. **Exhibit 2-34** shows the surrounding floodplains. Zones VE and AE are Special Flood Hazard Areas subject to flooding by the 1 percent annual chance flood.



SOURCE: Environmental Basemaps, FEMA Flood Insurance Rate maps, 2005
PREPARED BY: American Infrastructure Development, Inc., March, 2016.

EXHIBIT 2-34

NORTH

Flood Zones

2.13 Existing Utility Infrastructure

The utility systems serving the Airport include electric power, water, sanitary sewer, storm sewer, and communications. The following sections provide a brief overview of the utilities available to aviation and non-aviation parcels at the Airport.

2.13.1 ELECTRIC POWER

Electric power for the Airport is currently supplied by the Keys Energy Services, formerly known as the City Electric System. The City of Key West purchased the electric utility in 1943 and the City Council created a Utility Board to oversee the utility. As of March 2016, the City of Key West maintains ownership of the power service.

Power service is available throughout the aviation and non-aviation parcels at the Airport. Power is also readily accessible to areas that Airport management may wish to further develop or change the existing land use. The main transformer and power distribution hub for the Airport is located on a tall grassed mound just southeast of the ATCT. From there, power is distributed to the terminal, the ATCT, the FAA electrical vault, and throughout the aviation and non-aviation parcels at the Airport. The FAA vault provides power to the windsock, the Automated Surface Observing System (ASOS), and other airside equipment. The main Airport transformer is depicted on **Exhibit 2-35**.

Exhibit 2-35: Main Airport Transformer



SOURCE: American Infrastructure Development, Inc., Data Collection Trip, March 2016.
PREPARED BY: American Infrastructure Development, Inc. April 2016

2.13.2 WATER

Existing water services for the Airport are provided by the Florida Keys Aqueduct Authority (FKAA). The primary water source for the FKAA is the Biscayne Aquifer and the wellfield is located near Everglades National Park. During the higher demand dry season, the FKAA may draw up to 4 percent of its water supply from the Floridan Aquifer.[6]

An existing 12-inch FKAA water main runs along the frontage of the Airport within the right-of-way of SR A1A. The Airport's water supply enters the Airport via an 8-inch water main along the main entrance of the Airport (Faraldo Circle). Potable water is distributed throughout the landside and a portion of the airside facilities via a series of 4-inch and 6-inch lines. An 8-inch fire water line branches off the 8-inch water main and provides firewater flow to the terminal and surrounding facilities. All facilities at the Airport are supplied with potable water, including the FBO terminal, the ARFF facility, the ATCT, the hangars, and the CBP facility, among others. Water is not currently distributed to the general aviation apron west of Taxiway C, nor any areas north of Taxiway A.

2.13.3 SANITARY SEWER

Existing sanitary sewer services for the Airport are provided by Operations Management International (OMI). OMI has been contracted by the City of Key West to operate and maintain the Richard A. Heyman Environmental Pollution Control Facility located on the south end of Fleming Key. The facility was updated in 2001 to guarantee advanced treatment standards, which coincided with construction of the first deep injection well for the treatment plant's effluent. Currently, all effluent from the plant is injected into the aquifer via a series of wells and the previous effluent outfall to the ocean was permanently closed.

The sanitary waste from the Airport is collected by two separate gravity-fed sewer systems. Each system drains to its dedicated lift station, which conveys sanitary flows to the treatment plant via force main. The eastern system drains to a lift station located just east of the FedEx building and collects the waste from the rental car facilities, the Public Works facilities, the FedEx building, and the CBP building. The western system is larger and serves the majority of the rest of the Airport. The western lift station is located east of the fuel farm and collects sanitary flows from the terminal, the ATCT, the hangars, the Florida Highway Patrol building, and the Florida Keys Youth Center building, among others.

Additionally, there is a small stand-alone septic system within the vehicle maintenance parcel just east of the Faraldo Circle entrance to the Airport. This parcel is also served by the eastern gravity sewer system. It is unclear if the existing septic system is still in use.

2.13.4 STORM SEWER

Existing storm sewer at the Airport consists of a network of drainage pipes throughout the landside and much of the airside. Because of the low elevation of the Airport, the high groundwater table, and space constraints,

[6] Source: *http://www.fkaa.com/our_water_source.htm*

the drainage system is unique. In general, stormwater runoff from developed areas does not flow directly into the ocean or into wetland systems leading to the ocean. Instead, each basin treats runoff in ponds and discharges the treated stormwater via gravity flow or pumped flow into deep injection wells. The injection wells allow stormwater to flow into the aquifers below the island of Key West. Prior to reaching the injection wells, the stormwater is treated a second time through oil/water separators. The use of injection wells also saves space at the Airport, as the Atlantic Ocean is an Outstanding Florida Waterway (OFW) and, as such, requires a higher level of treatment for ponds that discharge directly to an OFW. The Airport uses approximately 19 injection wells and has at least 19 discharge points from its storm sewer system.[7] **Exhibit 2-36** provides a view of the access hatch to one of the many injection wells on the Airport.

Exhibit 2-36: Injection Well – Access Hatch



SOURCE: American Infrastructure Development, Inc. Data Collection Trip, March 2016.
PREPARED BY: American Infrastructure Development, Inc. April 2016

2.13.5 COMMUNICATIONS

Existing communications services for the Airport are provided by Comcast and AT&T for Internet and AT&T for telephone. In general, the Internet and voice communications are available throughout the Airport, including the ATCT, the terminal, and the Airport Administration building, among others. AT&T communication lines enter the Airport at the public park west of the Fort East Martello Museum, and are routed to the main communications room in the Airport Administration building. Comcast communication lines enter the Airport from overhead lines near the Adam Arnold Annex building, and are routed to the main

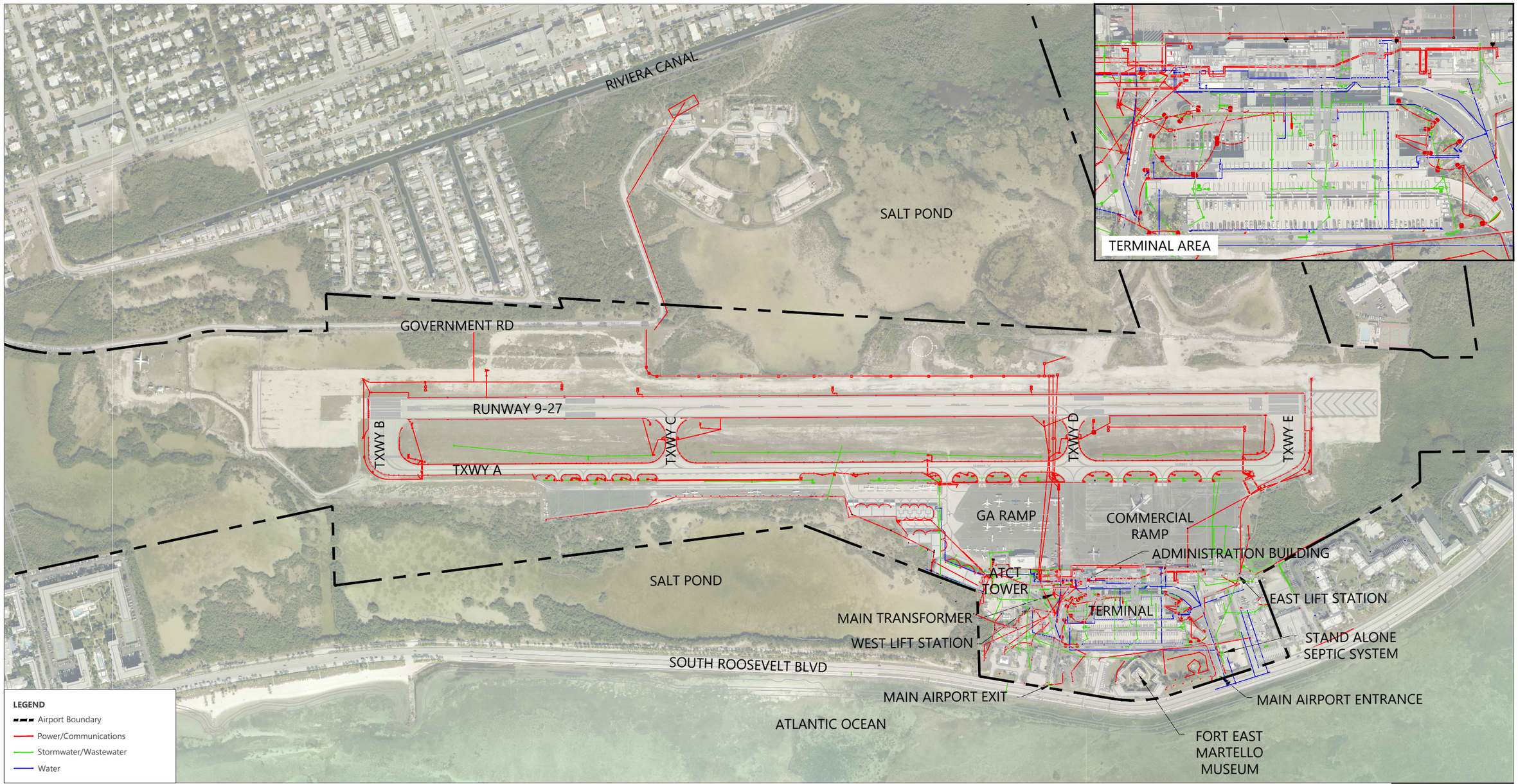
[7] Source: URS, *Airport Layout Plan for Underground Utilities, 2011.*

communications room in the terminal[8]. An existing FAA conduit run connects the FAA vault to FAA equipment around the airfield, such as the windsock and ASOS.

2.13.6 UTILITY SYSTEMS MAP

Exhibit 2-37 depicts the utility information for the Airport.

[8] Source: Telephone conversation with Chris Hawkes, Airport Systems Technician, Key West International Airport, and Elton Smith, Civil Engineer, American Infrastructure Development, on 3/15/2016.



SOURCE: Basemap, and Aerial Photography, Jacobs, September, 2015; Utility Mapping, URS, 2011
PREPARED BY: American Infrastructure Development, Inc., March, 2016.

EXHIBIT 2-37

NORTH 0 500 ft.

Utility Systems

Chapter 3

Aviation Activity Forecast

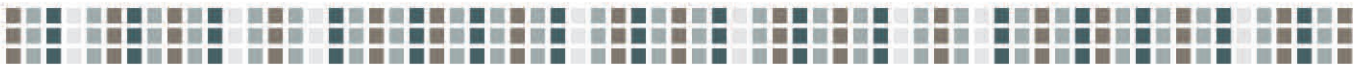


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3. Aviation Activity Forecast

This chapter presents a discussion of historical aviation activity and trends at the Airport since 2006, and it summarizes forecasts of aviation activity at the Airport for 2020, 2025, and 2035, the end of the planning period for EYW's Master Plan Update. Forecasts were developed for enplaned passengers, as well as for passenger, cargo, air taxi, general aviation, and military operations. Projections were developed for the aircraft fleet mix serving the Airport. These forecasts and projections will provide the basis for determining facility requirements and conducting the financial and other analyses necessary for preparing the Master Plan Update.

The forecasts were prepared in 2016 using calendar year 2015 as the base year, which is the latest year for which complete passenger data were available. While 2015 serves as the forecast base year, in order to most accurately represent the current state of the Airport at the time of this Master Plan Study, airline schedule data from 2016 were considered.[1] Published airline schedules for March 2016, the peak month at the Airport in 2016, provide the basis for presenting the airlines currently serving the Airport, including the destinations currently served and the average seat capacity.

The aviation activity forecasts presented in this section are based on assumptions about aviation activity in the Air Service Area for the Airport. For the purposes of the Master Plan Study forecast, the Air Service Area for EYW (The EYW Air Service Area) is Monroe County, Florida, as illustrated on **Exhibit 3-1**. The Airport is located in Monroe County, and, while Monroe County borders other counties in Florida with large population centers, the Airport is isolated from the rest of the state of Florida, since it is separated from major population centers by both the Gulf of Mexico and Everglades National Park. However, the Airport is within about a three hours' drive from the major population centers of Miami and Fort Lauderdale via four-lane U.S. Highway 1.

Due to the Airport's geographic location, along with the high proportion of passengers at the Airport who originate outside of the region, socioeconomic conditions in Monroe County do not correlate well with aviation activity at the Airport and cannot be assumed to drive its activity. Instead, with the high proportion of passengers originating outside the region, socioeconomic conditions in markets with the highest activity to Key West, as well as nationally, correlate well with passenger activity at the Airport and are used in the forecast. Many of the factors influencing aviation demand cannot readily be quantified, and any projection is subject to uncertainties; as a result, the forecast process should not be viewed as precise. Actual airline traffic

[1] Airline schedules for 2016 are subject to change.

at the Airport may differ from the forecasts presented herein, because events and circumstances may not occur as expected, and these differences may be material.

Exhibit 3-1: Key West International Airport Air Service Area



SOURCES: ESRI, May 2010 (Streams and Rivers); Tom Tom, June 2015; U.S. Department of Commerce, June 2015; U.S. Census Bureau, June 2015 (USA Counties Map).

PREPARED BY: Ricondo & Associates, Inc., June 2016.

The remainder of Chapter 2 is organized as follows:

- Historical Aviation Activity and Trends
- Factors Affecting Aviation Demand at the Airport
- Passenger Airline Forecast Methodology and Results
- All-Cargo Volumes and Operations Forecast
- General Aviation Forecast
- Other Air Taxi Operations Forecast
- Summary of Total Operations Forecast

3.1 Historical Aviation Activity and Trends

3.1.1 PASSENGER ACTIVITY AND OPERATIONS

The Airport is classified by the FAA as a small-hub airport, accounting for between 0.05 and 0.25 percent of total nationwide enplaned passengers. As shown in **Table 3-1**, 362,802 passengers were enplaned and 53,548 aircraft operations were conducted at the Airport in 2015. The Airport experienced its greatest number of enplaned passengers—403,372—in 2013 and the greatest number of aircraft operations in 2007, with 90,486 operations.

Table 3-1: Historical Enplaned Passengers and Operations Summary

YEAR	ENPLANED PASSENGERS	PASSENGER GROWTH	PASSENGER AIRCRAFT OPERATIONS	OPERATIONS GROWTH
2006	285,804	-	87,049	-
2007	271,632	(5.0%)	90,486	3.9%
2008	232,552	(14.4%)	71,043	(21.5%)
2009	234,887	1.0%	54,904	(22.7%)
2010	287,849	22.5%	57,253	4.3%
2011	335,700	16.6%	60,371	5.4%
2012	370,959	10.5%	62,892	4.2%
2013	403,372	8.7%	57,446	(8.7%)
2014	384,663	(4.6%)	53,585	(6.7%)
2015	362,802	(5.7%)	53,548	(0.1%)
Compound Annual Growth Rate				
2006–2009	(6.3%)		(14.2%)	
2009–2012	16.5%		4.6%	
2012–2015	(0.7%)		(5.2%)	
2006–2015	2.7%		(5.3%)	

NOTE: Passenger totals do not include nonrevenue passengers.

SOURCE: U.S. Department of Transportation, Form T-100, March 2016.

PREPARED BY: Ricondo & Associates, Inc., March 2016.

Further information concerning enplaned passengers at the Airport and comparisons with national trends in enplaned passengers between 2006 and 2015 are discussed in the following paragraphs.

2006–2007: From 2006 to 2007, the Airport experienced a 3.9 percent growth in operations and a 5.0 percent decrease in enplaned passengers. The decrease in enplaned passengers was driven by the suspension of service by Florida Coastal Airlines and Cape Air, the latter of which suspended service at all Florida airports in

2007 in order to focus its operations in the Northeast United States and in the Caribbean. The increase in operations was primarily due to the commencement of service at the Airport by two new local airlines operating small aircraft: Chalk's International Airlines and Yellow Air Taxi.

2007–2008: In 2008, operations at the Airport decreased by 21.5 percent, and enplaned passengers decreased by 14.4 percent. Chalk's International Airlines ceased operations at the Airport after the United States Department of Transportation revoked its operating license in September 2007.[2] Delta Air Lines and American Airlines also decreased scheduled departures at the airport, by 27.1 percent and 4.9 percent, respectively.

2008–2009: From 2008 to 2009, enplaned passengers at the Airport increased 1.0 percent, while passenger operations decreased 22.7 percent. The decrease in operations was driven by a 37.6 percent reduction in scheduled departures by United Airlines, operated by its regional partner Silver Airways, and the near-withdrawal of Yellow Air Taxi from the Airport, as it reduced scheduled departures by 89.4 percent. American Airlines and Delta Air Lines also both reduced scheduled departures from the Airport, by 8.9 percent and 15.0 percent, respectively, but their reduction in departures came with an increase in average seats per departure. American Airlines increased its average seats per departure by nearly four seats, and Delta Air Lines increased its average seats per departure by approximately six seats.

2009–2010: In December 2009, AirTran Airways commenced service at the Airport, and 2010 marked the first full year of service at the Airport for Cape Air since its return in June 2009. This new service, combined with an increase in scheduled departures of 6.4 percent for American Airlines and 6.0 percent for Delta Air Lines, contributed to a 4.3 percent increase in passenger operations, despite Yellow Air Taxi discontinuing service at the Airport. The service changes by AirTran Airways, Cape Air, and Delta Air Lines, along with continued upgauging by Delta Air Lines, which increased its average scheduled seats per departure from 71 in 2009 to 87 in 2010, contributed to a 22.5 percent increase in enplaned passengers from 2009 to 2010.

2010–2011: From 2010 to 2011, enplaned passengers at EYW increased 16.6 percent, while operations increased 5.4 percent as AirTran Airways continued to expand its service at the Airport and Delta Air Lines continued to upgauge its aircraft. AirTran Airways operated its 137-seat Boeing 737-700 aircraft at the Airport, and Delta Air Lines increased its average seats per departure from approximately 87 to approximately 105. With Delta Air Lines and AirTran Airways offering service on large aircraft, fewer operations were needed to serve the same number of passengers, resulting in a slower increase in aircraft operations.

2011–2012: After its merger with Continental Airlines in 2010, United Airlines began integration of the two airlines' networks, resulting in an increase in operations (served by Continental Airlines' regional partner Silver Airways) by 56.2 percent from 2011 to 2012. After its acquisition of AirTran Airways in 2011, Southwest Airlines also increased service at the Airport, increasing scheduled departures by 20.1 percent. Delta Air Lines

[2] Stieghorst, Tom, "Chalk's Airlines Loses Flight License," *Sun Sentinel,* October 19, 2007, http://articles.sun-sentinel.com/2007-10-19/news/0710180726_1_chalk-s-seaplanes-airport-international-airlines (accessed February 17, 2016).

continued to increase both its scheduled departures and seats, by 10.0 percent and 11.6 percent, respectively. The increased service by Delta Air Lines, United Airlines, and Southwest Airlines contributed to a 10.5 percent increase in enplaned passengers and a 4.2 percent increase in operations at the Airport.

2012–2013: In 2013, the Airport experienced an 8.7 percent growth in enplaned passengers as Southwest Airlines (including AirTran Airways) increased its scheduled departures by 40.0 percent. However, overall operations at the Airport decreased by 8.7 percent as Delta Air Lines continued to use more Boeing 737-700 aircraft at the Airport in lieu of Bombardier CRJ 700 aircraft, allowing it to serve more passengers with fewer operations. Additionally, United Airlines changed its relationship with Silver Airways from a regional affiliate to a codeshare partner, leading to Silver Airways' 15.8 percent reduction in departures as it began to operate as an independent regional airline. A 14.1 percent reduction in general aviation and other air taxi operations also contributed to the decline in operations at the Airport.

2013–2014: From 2013 to 2014, operations at the Airport decreased 6.7 percent, and enplaned passengers decreased 4.6 percent as Southwest Airlines ceased service to the Airport in July 2014. In addition, a 9.8 percent reduction in general aviation and other air taxi operations contributed to the decrease in operations at the Airport.

2014–2015: From 2014 to 2015, enplaned passengers decreased 5.7 percent, while operations decreased 0.1 percent. The decrease in enplaned passengers was largely driven by the full-year effect of Southwest Airlines' cessation of operations in July 2014. However, operations did not decline as much as enplaned passengers as Silver Airways continued to grow at the Airport, increasing its operations by 21.4 percent.

Between 2006 and 2015, compound annual growth rate (CAGR) at the Airport was 2.3 percent, which was faster than the 0.3 percent CAGR for total national enplaned passengers. Due to this, the Airport's share of U.S. total enplaned passengers increased from 0.04 percent to 0.05 percent, and the Airport was reclassified from a non-hub primary airport to a small-hub airport,[3] as illustrated in **Table 3-2**.

3.1.2 AIR SERVICE

Table 3-3 presents the Airport's base of airlines, which comprises one mainline airline, thee regional airlines operating as regional partners of mainline airlines, and one independent regional airline.[4] In addition, two all-cargo airlines operate at the Airport. As shown in **Table 3-4**, American Airlines and Delta Air Lines and their

[3] According to the FAA, a Non-hub Primary Airport has more than 10,000 annual enplanements but less than 0.05 percent of total national enplanements, and a Small-Hub Airport has at least 0.05 percent, but less than 0.25 percent, of total national enplanements.

[4] For the purposes of this report, mainline airlines are defined to be large national or international airlines. Regional airlines are defined to be airlines operating on behalf of a mainline airline using their own operating certificate or smaller, regional airlines operating on their own behalf.

regional partners have served the Airport since 2006, while Silver Airways began operating independently in 2013.[5]

Table 3-2: Historical Airport and National Enplaned Passengers Comparison

YEAR	AIRPORT ENPLANED PASSENGERS	AIRPORT GROWTH	U.S. TOTAL ENPLANED PASSENGERS	U.S. GROWTH	MARKET SHARE
2006	285,804		750,791,000		0.04%
2007	271,632	(5.0%)	775,989,000	3.4%	0.04%
2008	232,552	(14.4%)	749,242,000	(3.4%)	0.03%
2009	234,887	1.0%	709,290,000	(5.3%)	0.03%
2010	287,849	22.5%	726,545,000	2.4%	0.04%
2011	335,700	16.6%	737,393,000	1.5%	0.05%
2012	370,959	10.5%	742,822,000	0.7%	0.05%
2013	403,372	8.7%	748,537,000	0.8%	0.05%
2014	384,663	(4.6%)	768,119,000	2.6%	0.05%
2015	362,802	(5.7%)	804,471,000	4.7%	0.05%
Compound Annual Growth Rate					
2006–2009	(6.3%)		1.9%		
2009–2012	16.5%		1.6%		
2012–2015	(0.7%)		2.7%		
2006–2015	2.7%		0.8%		

NOTE: Passenger totals do not include nonrevenue passengers.

SOURCES: U.S. Department of Transportation, Form T-100, March 2016; Bureau of Transportation Statistics, May 2016 (U.S. total enplanements).
PREPARED BY: Ricondo & Associates, Inc., May 2016.

[5] Prior to 2013, Silver Airways operated on behalf of United Airlines.

Table 3-3: Airlines Currently Serving Key West International Airport

SCHEDULED U.S. PASSENGER AIRLINES (5)	MARKETED AS:
Delta Air Lines	Delta Air Lines
Envoy Air Incorporated	American Airlines[1/]
ExpressJet Airlines	Delta Air Lines
Republic Airlines	American Airlines[1/]
Silver Airways Corporation	Silver Airways
ALL-CARGO AIRLINES (2)	
Mountain Air Cargo[2/]	
Martinaire[3/]	

NOTES:

1/ American Airlines and US Airways merged on December 9, 2013. A Single Operating Certificate was issued on April 8, 2015. For the purposes of this Master Plan Study, the airlines are combined.

2/ Mountain Air Cargo subcontracts to FedEx; the aircraft are owned by FedEx.

3/ Martinaire flies strictly for UPS, but the aircraft are owned by Martinaire.

SOURCES: Key West International Airport, March 2016; Innovata, March 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

Table 3-4: Historical Scheduled Passenger Airline Base

AIRLINE[1/]	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Chalk's International Airlines		●								
American Airlines[2/]	●	●	●	●	●	●	●	●	●	●
Cape Air	●			●	●	●	●	●		
Delta Air Lines	●	●	●	●	●	●	●	●	●	●
Florida Coastal Airlines	●									
Silver Airways								●	●	●
Southwest Airlines[3/]				●	●	●	●	●	●	
United Airlines[4/]	●	●	●	●	●	●	●	●		
Yellow Air Taxi		●	●	●						

NOTES:

1/ Includes regional partner airlines, as applicable.

2/ American Airlines and US Airways merged on December 9, 2013; for the purposes of this Master Plan Study, the two airlines are combined.

3/ Southwest Airlines and AirTran Airways merged in 2011; for the purposes of this Master Plan Study, the two airlines are combined.

4/ United Airlines and Continental Airlines merged in 2010; for the purposes of this Master Plan Study, the two airlines are combined.

SOURCES: Key West International Airport, February 2016; Innovata, March 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

The scheduled airline enplaned passengers and market share data in **Table 3-5** indicate that service at the Airport is mostly provided by American Airlines and Delta Air Lines. For these airlines, the Airport serves as a spoke within their route networks, flying passengers from the Airport to connecting hubs or focus cities and enabling them to reach many destinations with one stop.

Enplaned passenger market shares have fluctuated between 2011 and 2015. American Airlines (including US Airways) enplaned the most passengers at the Airport in 2011 and 2012, but Delta Air Lines has enplaned the most passengers since 2013 after upgauging its fleet at the Airport. Delta Air Lines' share of enplaned passengers at the Airport has increased from 30.1 percent in 2011 to 38.4 percent in 2015. American Airlines' share of enplaned passengers has fluctuated with the entry and exit of other airlines at the Airport, varying from a high of 40.9 percent in 2011 to a low of 25.2 percent in 2013, when its share of enplaned passengers was third-highest at the Airport, behind both Delta Air Lines and Southwest Airlines. American Airlines' share of enplaned passengers recovered to 28.3 percent in 2014 and 38.0 percent in 2015 as United Airlines and Southwest Airlines discontinued service at the Airport.[6]

[6] United Airlines ceased operations with its regional affiliate, Silver Airways, but the two airlines continue to have a codeshare agreement, as discussed in Section 2.1.1.

Table 3-5: Historical Total Enplaned Passengers by Airline

	2011		2012		2013		2014		2015	
AIRLINE[1/]	ENPLANED PASSENGERS	SHARE	ENPLANED PASSENGERS	SHARE	ENPLANED PASSENGERS	SHARE	ENPLANED PASSENGERS	SHARE	ENPLANED PASSENGERS	SHARE
Delta Air Lines	101,021	30.1%	112,482	30.3%	124,186	30.8%	136,537	35.5%	139,225	38.4%
American Airlines[2/]	137,286	40.9%	124,086	33.5%	101,686	25.2%	109,042	28.3%	138,040	38.0%
Silver Airways					28,526	7.1%	69,162	18.0%	73,296	20.2%
Other Airlines[3/]	67	0.0%	4,651	1.3%	9,418	2.3%	14,104	3.7%	12,241	3.4%
Cape Air	10,740	3.2%	10,533	2.8%	8,292	2.1%				
United Airlines[4/]	26,845	8.0%	52,842	14.2%	27,186	6.7%				
Southwest Airlines[5/]	59,741	17.8%	66,365	17.9%	104,078	25.8%	55,818	14.5%		
Total[6/]	**335,700**	**100.0%**	**370,959**	**100.0%**	**403,372**	**100.0%**	**384,663**	**100.0%**	**362,802**	**100.0%**

NOTES:

1/ Includes regional partner airlines, as applicable.

2/ American Airlines and US Airways merged on December 9, 2013; for the purposes of this Master Plan Study, the two airlines are combined.

3/ Includes nonscheduled service.

4/ United Airlines and Continental Airlines merged in 2010; for the purposes of this Master Plan Study, the two airlines are combined.

5/ Southwest Airlines and AirTran Airways merged in 2011; for the purposes of this Master Plan Study, the two airlines are combined.

6/ Figures may not add to totals shown due to rounding.

SOURCE: U.S. Department of Transportation, Form T-100, March 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

Exhibit 3-2 displays the destinations served nonstop from the Airport. As of March 2016, regularly scheduled service is provided to eight domestic destinations: five in Florida and the other three in Atlanta (ATL), Washington-National (DCA), and Charlotte (CLT), which is served seasonally.

Exhibit 3-2: Nonstop Destinations Served From the Airport



SOURCE: Innovata, March 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

Table 3-6 presents the markets served nonstop from the Airport in March 2016. In March 2016, there were an average of 27 daily departures scheduled from the Airport and an average daily departing seat capacity of 1,755 seats. All of the eight destinations served in the month were served by a single airline or its regional partner airlines.

Table 3-6: Scheduled Nonstop Service in March 2016

DESTINATION	AVERAGE DAILY DEPARTURES	AVERAGE DAILY SEATS	NUMBER OF AIRLINES[1/]
Atlanta	6	624	1
Fort Lauderdale	5	168	1
Miami	5	370	1
Charlotte	3	237	1
Tampa	3	100	1
Orlando-MCO	2	72	1
Washington-Reagan	2	149	1
Fort Myers	1	34	1
Total Daily Average	27	1,754	

NOTES: Average is calculated as the number of departures in the month of March divided by the number of days in the month.

1/ Includes regional partner airlines, as applicable.

SOURCE: Innovata, March 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

Traffic at the Airport primarily comprises origination and destination (O&D) passengers, those who begin or end their journeys at EYW. As provided in **Table 3-7**, the number of O&D passengers enplaned at the Airport grew from 2009 to 2012, from 234,398 to 368,104, a CAGR of 16.2 percent. The number of O&D passengers grew an additional 8.4 percent from 2012 to 2013 before decreasing to 380,126 in 2014 and 360,664 in 2015. The CAGR of O&D enplaned passengers at the Airport was 2.7 percent over the entire period from 2006 to 2015.

From 2006 to 2015, connecting traffic has accounted for no more than 1.2 percent of enplaned passengers, such as what occurred in 2014. Given the Airport's use as a spoke in route networks, or for point-to-point service, along with the Airport's non-central location, it is not expected that the ratio of O&D to connecting passengers will differ significantly throughout the forecast period.

Table 3-8 presents the domestic O&D demand at the Airport in 2015, measured as passengers per day, each way (PDEW). Approximately 20 percent, or 188 PDEW, travelled between EYW and one of the top five domestic destinations in 2015. The top 25 markets comprised approximately 62 percent, or 579 PDEW, of the Airport's domestic O&D market. Four of the top five markets are scheduled to be served nonstop from the Airport in 2016.

Table 3-7: Historical O&D and Connection Enplaned Passenger Traffic

YEAR	O&D PASSENGERS	O&D PERCENT OF TOTAL	CONNECTION PASSENGERS	CONNECTION PERCENT OF TOTAL	TOTAL AIRPORT ENPLANED PASSENGERS
2006	283,965	99.4%	1,839	0.6%	285,804
2007	270,418	99.6%	1,214	0.4%	271,632
2008	231,466	99.5%	1,086	0.5%	232,552
2009	234,398	99.8%	489	0.2%	234,887
2010	286,437	99.5%	1,412	0.5%	287,849
2011	333,841	99.4%	1,859	0.6%	335,700
2012	368,104	99.2%	2,855	0.8%	370,959
2013	399,131	98.9%	4,241	1.1%	403,372
2014	380,126	98.8%	4,537	1.2%	384,663
2015	360,664	99.4%	2,138	0.6%	362,802
Compound Annual Growth Rate					
2006–2009	(6.2%)		(35.7%)		(6.3%)
2009–2012	16.2%		80.1%		16.5%
2012–2015	(0.7%)		(9.2%)		(0.7%)
2006–2015	2.7%		1.7%		2.7%

NOTE: Passenger totals do not include nonrevenue passengers.

SOURCES: U.S. Department of Transportation, Form T-100, March 2016; U.S. Department of Transportation, DB1B Survey, March 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

Table 3-8: 2015 Top 25 Domestic O&D Markets at the Airport

RANK	DESTINATION	O&D PASSENGERS PDEW[1/]	AVERAGE FARE	NONSTOP SERVICE[2/]
1	PHL	42	$225	
2	TPA	38	$125	●
3	ATL	38	$189	●
4	MCO	35	$137	●
5	DCA	34	$223	●
6	BOS	34	$256	
7	EWR	34	$229	
8	FLL	33	$82	●
9	CLT	31	$185	●
10	LGA	29	$222	
11	ORD	29	$234	
12	BWI	20	$250	
13	DTW	19	$264	
14	JFK	16	$232	
15	MSP	15	$249	
16	IAH	15	$234	
17	DFW	15	$242	
18	JAX	14	$181	
19	PIT	14	$226	
20	IND	13	$243	
21	CVG	12	$201	
22	CLE	12	$248	
23	MIA	12	$124	●
24	ORF	12	$297	
25	CMH	11	$256	
	Top 5 Markets	187	$181	
	Top 25 Markets	577	$206	
	Other O&D Markets	362	$266	
	Total O&D	939	$229	
	Total U.S. Domestic	2,585,285	$180	

NOTES:

1/ Passengers per day, each way (PDEW).

2/ Based on nonstop service in 2016, not 2015.

SOURCES: U.S. Department of Transportation, DB1B Survey, May 2016; Innovata, May 2016.
PREPARED BY: Ricondo & Associates, Inc., May 2016.

In addition to passenger volume, O&D demand at the Airport can be measured by passenger revenue generated by the O&D passenger base. **Table 3-9** presents domestic O&D passenger revenue generated at the Airport (excluding taxes and fees).[7] While O&D passengers have grown at a CAGR of 1.6 percent from 2006 to 2015, revenue growth has been more pronounced, increasing at a CAGR of 5.7 percent during the same period.

Table 3-9: Airport Historical Domestic O&D Passengers and Passenger Ticket Revenue

YEAR	O&D ENPLANED PASSENGERS	O&D PASSENGER GROWTH	O&D PASSENGER TICKET REVENUE ($)	REVENUE GROWTH PERCENT OF TOTAL
2006	303,881		47,590,266	
2007	277,733	(8.6%)	48,766,379	2.5%
2008	228,816	(17.6%)	45,515,804	(6.7%)
2009	224,726	(1.8%)	42,006,938	(7.7%)
2010	276,373	23.0%	50,647,507	20.6%
2011	329,858	19.4%	60,648,808	19.7%
2012	364,037	10.4%	68,550,852	13.0%
2013	380,733	4.6%	73,371,536	7.0%
2014	361,691	(5.0%)	75,250,422	2.6%
2015	349,271	(3.4%)	78,575,071	4.4%
Compound Annual Growth Rate				
2006–2009	(9.6%)		(4.1%)	
2009–2012	17.4%		17.7%	
2012–2015	(1.4%)		4.7%	
2006–2015	1.6%		5.7%	

NOTE: Excludes ancillary fees.

SOURCES: U.S. Department of Transportation, Form T-100, May 2016; U.S. Department of Transportation, DB1B Survey, May 2016.
PREPARED BY: Ricondo & Associates, Inc., May 2016.

After declining by 7.7 percent in 2009 from 2008 levels, domestic O&D passenger revenue increased at a CAGR of 17.7 percent from 2009 to 2012, as domestic O&D enplaned passengers increased at a CAGR of 17.4 percent. This period corresponds to the post-recession period, during which airlines began practicing more capacity discipline, limiting the capacity made available to only those passengers willing to pay fares high enough to meet their fiscal goals (see Section 2.2.4). From 2012 to 2015, domestic O&D passenger revenue grew at a CAGR of 4.7 percent, while domestic O&D enplaned passengers declined at a CAGR of 1.4 percent.

[7] Fees are non-ticket charges including: security charges, facility charges, checked luggage, seat assignments, etc.

While the higher growth of revenue relative to passengers is primarily due to the capacity discipline exhibited throughout the industry, it also presents a possible indication of latent demand. As the economy continues to grow, a larger portion of the travelling public will have the ability to pay the higher fares demanded by the market. This will provide an opportunity for airlines to profitably introduce additional capacity into the marketplace.

3.1.3 AIRCRAFT OPERATIONS

Table 3-10 presents historical aircraft operations at the Airport for 2006 through 2015. Operations in each category of activity (passenger airline, cargo, general aviation/other air taxi, and military) have fluctuated from year to year. Overall, the number of aircraft operations at the Airport decreased at a CAGR of 5.3 percent between 2006 and 2015. During this period, passenger airline operations decreased at a CAGR of 3.5 percent, with the majority of the decline occurring during the period from 2008 to 2011, coinciding with airline bankruptcies and service reductions during the economic recession. Cargo operations decreased at a CAGR of 1.9 percent between 2006 and 2015, reaching a low in 2011 due in part to the economic recession. Since the low in 2011, cargo operations have consistently grown, increasing at a CAGR of 2.8 percent from 2012 to 2015. General aviation/other air taxi operations declined at a CAGR of 4.3 percent between 2006 and 2015, compared to a 2.0 percent compound annual decline of general aviation traffic nationally. The decline in general aviation/other air taxi operations has been more pronounced in recent years, declining at a CAGR of 7.5 percent between 2012 and 2015, compared to a 0.6 percent average annual rate of decline nationally. One possible reason for this decline is a shift in general aviation activity to nearby Florida Keys Marathon Airport, which is a general aviation airport where general aviation/other air taxi operations increased at a CAGR of 0.9 percent between 2012 and 2015.

Table 3-10: Historical Aircraft Operations

YEAR	PASSENGER AIRLINE	ALL CARGO	GENERAL AVIATION/OTHER AIR TAXI	MILITARY	Total
2006	25,715	866	49,870	10,598	87,049
2007	23,698	858	50,477	15,453	90,486
2008	21,043	818	44,028	5,154	71,043
2009	16,279	706	37,459	460	54,904
2010	18,087	711	37,974	481	57,253
2011	15,965	660	43,223	523	60,371
2012	19,566	672	42,260	394	62,892
2013	19,718	726	36,313	689	57,446
2014	18,267	743	33,913	662	53,585
2015	18,651	729	33,492	676	53,548
Compound Annual Growth Rate					
2006–2009	(14.1%)	(6.6%)	(9.1%)	(64.9%)	(14.2%)
2009–2012	6.3%	(1.6%)	4.1%	(5.0%)	4.6%
2012–2015	(1.6%)	2.8%	(7.5%)	19.7%	(5.2%)
2006–2015	(3.5%)	(1.9%)	(4.3%)	(26.3%)	(5.3%)

SOURCES: Federal Aviation Administration, March 2016; U.S. Department of Transportation, Form T-100, March 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

Table 3-11 presents passenger airline aircraft operations at the Airport. Silver Airways operated the most flights at EYW in 2015, accounting for 39.5 percent of all passenger airline operations at the Airport. American Airlines had the highest share of passenger airline operations in 2011 at 31.0 percent, which was before United Airlines increased operations on its regional partner Silver Airways after its merger with Continental Airlines in 2010; United Airlines experienced the highest share of passenger airline operations at the Airport in 2012. In 2015, American Airlines' share of passenger airline operations was 27.1 percent. Delta Air Lines' share of passenger airline operations has grown from 13.6 percent in 2011 to 16.6 percent in 2015, with a slight decrease in market share in 2012 due to the increased United Airlines operations. Nonscheduled, charter, passenger airlines accounted for 16.8 percent of passenger airline operations at the Airport in 2015.

Table 3-11: Historical Operations Share by Passenger Airline

AIRLINE[1/]	2011 SHARE	2012 SHARE	2013 SHARE	2014 SHARE	2015 SHARE
Silver Airways	0.0%	0.0%	15.5%	33.5%	39.5%
American Airlines[2/]	31.0%	24.6%	25.1%	27.5%	27.1%
Other Airlines[3/]	0.1%	5.9%	12.1%	18.8%	16.8%
Delta Air Lines	13.6%	12.3%	12.6%	15.0%	16.6%
Cape Air	23.0%	18.2%	13.6%	0.0%	0.0%
Southwest Airlines[4/]	7.6%	7.5%	10.4%	5.2%	0.0%
United Airlines[5/]	24.7%	31.5%	10.7%	0.0%	0.0%
Airport Total[6/]	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

NOTES:

1/ Includes regional partner airlines.

2/ American Airlines and US Airways merged on December 9, 2013; for the purposes of this Master Plan Study, the two airlines are combined.

3/ Includes nonscheduled service.

4/ Southwest Airlines and AirTran Airways merged in 2011; for the purposes of this Master Plan Study, the two airlines are combined.

5/ United Airlines and Continental Airlines merged in 2010; for the purposes of this Master Plan Study, the two airlines are combined.

6/ Figures may not add to totals shown because of rounding.

SOURCES: U.S. Department of Transportation, Form T-100, March 2016; Innovata, March 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

Table 3-12 presents the passenger airline aircraft operations by mainline and regional operations. Mainline operations accounted for 12.7 percent of total passenger airline aircraft operations, and total mainline and regional passenger airline operations combined accounted for 34.8 percent of total Airport operations in 2015. Mainline operations at the Airport have increased at a compound annual growth rate of 27.1 percent from 2006 to 2015, while regional operations have decreased at a compound annual rate of 4.7 percent, primarily due to the increased use of larger aircraft by Delta Air Lines to serve its hub in Atlanta. All-cargo, other air taxi, general aviation, and military aircraft operations are shown in **Table 3-13**.

Table 3-12: Historical Mainline and Regional Passenger Airline Aircraft Operations

YEAR	MAINLINE OPERATIONS	SHARE OF PASSENGER AIRLINES	REGIONAL OPERATIONS	SHARE OF PASSENGER AIRLINES	TOTAL AIRLINE OPERATIONS	SHARE OF AIRPORT TOTAL	TOTAL AIRPORT OPERATIONS
2006	242	0.9%	25,473	99.1%	25,715	29.5%	87,049
2007	0	0.0%	23,698	100.0%	23,698	26.2%	90,486
2008	0	0.0%	21,043	100.0%	21,043	29.6%	71,043
2009	62	0.4%	16,217	99.6%	16,279	29.6%	54,904
2010	1,261	7.0%	16,826	93.0%	18,087	31.6%	57,253
2011	2,660	16.7%	13,305	83.3%	15,965	26.4%	60,371
2012	3,139	16.0%	16,427	84.0%	19,566	31.1%	62,892
2013	4,031	20.4%	15,687	79.6%	19,718	34.3%	57,446
2014	3,118	17.1%	15,149	82.9%	18,267	34.1%	53,585
2015	2,099	12.7%	16,552	88.7%	18,651	34.8%	53,548
Compound Annual Growth Rate							
2006–2009	(36.5%)		(14.0%)		(14.1%)		(14.2%)
2009–2012	269.9%		0.4%		6.3%		4.6%
2012–2015	(12.6%)		0.3%		(1.6%)		(5.2%)
2006–2015	27.1%		(4.7%)		(3.5%)		(5.3%)

SOURCES: U.S. Department of Transportation, Form T-100, March 2016; Federal Aviation Administration, February 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

Table 3-13: Historical Cargo, Other Air Taxi, General Aviation, and Military Aircraft Operations

	CARGO		OTHER AIR TAXI		GENERAL AVIATION		MILITARY		
YEAR	OPERATIONS	SHARE OF AIRPORT TOTAL	OPERATIONS	SHARE OF AIRPORT TOTAL	OPERATIONS	SHARE OF AIRPORT TOTAL	OPERATIONS	SHARE OF AIRPORT TOTAL	TOTAL AIRPORT OPERATIONS
2006	866	1.0%	2,825	3.2%	47,045	54.0%	10,598	12.2%	87,049
2007	858	0.9%	6,489	7.2%	43,988	48.6%	15,453	17.1%	90,486
2008	818	1.2%	4,819	6.8%	39,209	55.2%	5,154	7.3%	71,043
2009	706	1.3%	1,436	2.6%	36,023	65.6%	460	0.8%	54,904
2010	711	1.2%	857	1.5%	37,117	64.8%	481	0.8%	57,253
2011	660	1.1%	1,857	3.1%	41,366	68.5%	523	0.9%	60,371
2012	672	1.1%	622	1.0%	41,638	66.2%	394	0.6%	62,892
2013	726	1.3%	2,538	4.4%	33,775	58.8%	689	1.2%	57,446
2014	743	1.4%	5,099	9.5%	28,814	53.8%	662	1.2%	53,585
2015	729	1.4%	4,880	9.1%	28,612	53.4%	676	1.3%	53,548
Compound Annual Growth Rate									
2006-2009	(6.6%)		(20.2%)		(8.5%)		(64.9%)		(14.2%)
2009-2012	(1.6%)		(24.3%)		4.9%		(5.0%)		4.6%
2013-2015	2.8%		98.7%		(11.8%)		19.7%		(5.2%)
2006-2015	(1.9%)		6.3%		(5.4%)		(26.3%)		(5.3%)

SOURCES: U.S. Department of Transportation, Form T-100, March 2016; Federal Aviation Administration, March 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

3.2 Factors Affecting Aviation Demand at the Airport

This section discusses qualitative factors that could influence future aviation activity at the Airport. Data and information related to these factors have been either directly or indirectly incorporated into the development of activity forecasts for the Airport. Each of the eight qualitative factors considered in forecasting aviation activity at EYW are discussed below. These factors include broad economic and industry influences that are recognized to have a potential to inhibit or induce growth in aviation activity. Each factor is unique and not dependent on any other. Therefore, each factor is discussed individually; however, multiple factors may influence future activity at the Airport at any point in time.

3.2.1 NATIONAL ECONOMY

Nationally, trends in airline travel demand, measured by either passenger volumes or passenger revenue, have been closely correlated with national economic trends, most notably changes in gross domestic product (GDP). Section 2.3.2.4 presents an analysis of general economic trends, both national and local, that may influence demand for air service over time. Airport activity forecasts are based on forecasts of socioeconomic variables. If actual socioeconomic conditions vary from those forecast, then Airport activity will also likely vary.

3.2.2 STATE OF THE AIRLINE INDUSTRY

In the aftermath of the terrorist attacks on September 11, 2001, the U.S. airline industry experienced a reduction in the demand for airline travel, which exacerbated problems for a U.S. airline industry already weakened by the slowing economy and rising labor and fuel costs. This resulted in operating losses between 2001 and 2004 that totaled more than $22 billion (excluding extraordinary charges and gains). From 2005 through 2007, the airline industry recovered, posting combined operating profits.[8] However, in 2008 and through the first half of 2009, the combination of record-high fuel prices, weakening economic conditions, and a weak dollar resulted in the worst financial environment for the U.S. network and low-cost airlines since September 11, 2001. Since 2009, the industry has improved with industry consolidation, capacity realignment, and a recovering economy, which resulted in record industry profits in 2013 and 2014. North American airline members of the International Air Transport Association generated estimated profits of $21.5 billion in 2015 and are forecast to generate $22.9 billion in profits in 2016, after producing $11.2 billion in profits in 2014.[9]

3.2.3 AIRLINE MERGERS AND ACQUISITIONS

Since 2009, airlines have merged or acquired competitors in an attempt to become more competitive and cost efficient. In 2009, Delta Air Lines completed its merger with Northwest Airlines, initiating a wave of airline mergers and acquisitions. That same year, Republic Airways Holdings, a regional airline holding corporation,

[8] Airlines for America, *2009 Economic Report*, July 2009.

[9] International Air Transport Association, *Economic Performance of the Industry,* June 2016.

acquired Frontier Airlines of Denver and Midwest Airlines of Milwaukee. In 2010, United Airlines and Continental Airlines merged. In 2011, Southwest Airlines acquired AirTran Holdings, Inc., the former parent company of low-cost competitor AirTran Airways. In 2013, American Airlines and US Airways merged, creating what was the largest airline in terms of operating revenue and revenue passenger miles. And, most recently, on April 4, 2016, Alaska Airlines announced its acquisition of Virgin America, which is pending regulatory approval. These mergers and acquisitions have enabled airlines to reduce capacity and gain higher profitability. Additional consolidation in the U.S. airline industry could affect the amount of capacity offered to passengers industry-wide and at EYW.

3.2.4 CAPACITY DISCIPLINE – A CHANGE IN THE AIRLINE BUSINESS MODEL

In 2008, North American airline members of the International Air Transport Association recorded a 16.8 billion dollar loss. Shortly thereafter, many domestic airlines announced significant capacity reductions; increases in fuel surcharges, airfares, and fees; and other measures to address their financial challenges. These changes dramatically improved the financial conditions for the airlines. In contrast to earlier losses, North American International Air Transport Association airlines generated estimated profits of $21.5 billion in 2015, after producing $11.2 billion in profit in 2014.[10] Strict control on capacity, primarily in the domestic market, referred to as capacity discipline, is the principal driver behind the financial turnaround experienced by the airline industry.[11]

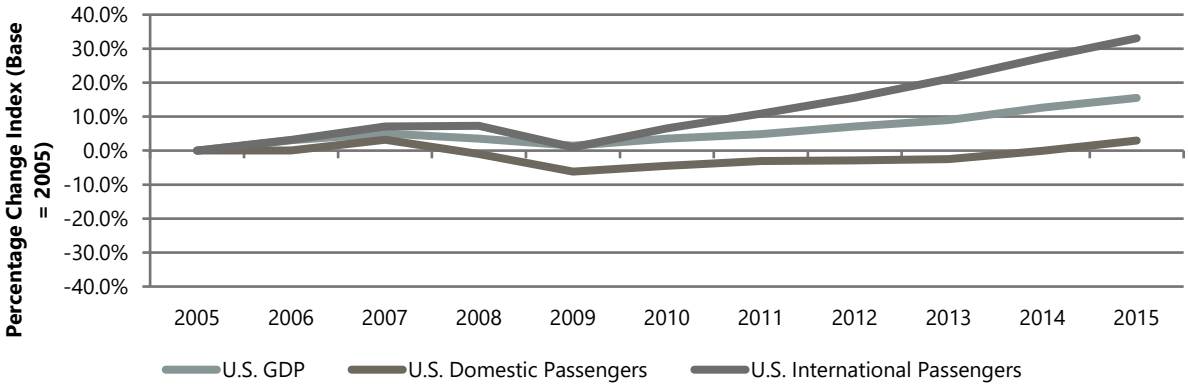
Capacity discipline reflects a shift in the airline business model, from an environment where market-share targets were pursued to one where financial targets are pursued. The new business model resulted in a 10 percent decrease in U.S. domestic seat capacity between 2008 and 2014 as airlines shed less profitable capacity and passenger volumes not contributing toward the achievement of financial targets. **Exhibit 3-3** illustrates the change in U.S. airline industry passenger volumes since 2005 relative to the change in U.S. GDP, a driver of demand for air travel. Both domestic and international passenger volumes followed GDP trends until 2009, after which domestic passenger volumes remained largely unchanged, while GDP and international passenger volume growth resumed. More-profitable international passengers have continued to be accommodated by airlines. **Exhibit 3-4** illustrates the change in U.S. domestic passenger volume, passenger revenues, and U.S. GDP since 2005. While domestic passenger volumes have not followed GDP trends since 2008, another measure of passenger demand—passenger revenues—has increased as U.S. airlines have focused on achieving financial targets through lower domestic passenger volumes and higher passenger fares.

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10 International Air Transport Association, *Economic Performance of the Industry*, June 2016.

11 With fuel prices at their lowest levels since 2007, capacity discipline is starting to erode as airlines add capacity that may not have been profitable in previous years, leading to some downward pressure on fares and revenue.

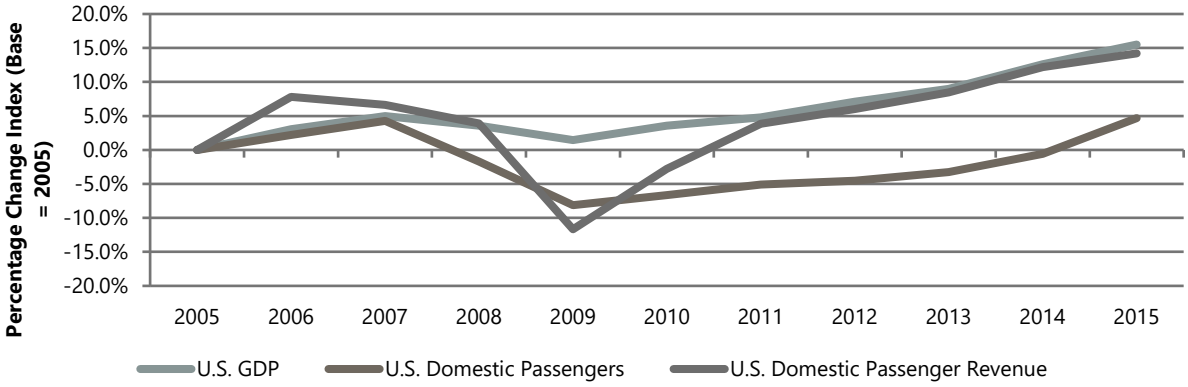
Exhibit 3-3: Growth Trends of U.S. Passengers and Gross Domestic Product



NOTES: U.S. GDP is inflation-adjusted. Data for 2015 are for the four quarters ending Q3 2015, the latest data available for international passengers.

SOURCE: U.S. Department of Commerce Bureau of Economic Analysis, May 2016; U.S. Department of Transportation, Form T-100, May 2016.
PREPARED BY: Ricondo & Associates, Inc., May 2016.

Exhibit 3-4: Growth Trends of U.S. Domestic Passengers, Passenger Revenue, and Gross Domestic Product



NOTE: U.S. GDP and U.S. Domestic Passenger Revenue are inflation-adjusted.

SOURCES: U.S. Department of Commerce Bureau of Economic Analysis, May 2016; U.S. Department of Transportation, DB1B Survey, May 2016.
PREPARED BY: Ricondo & Associates, Inc., May 2016.

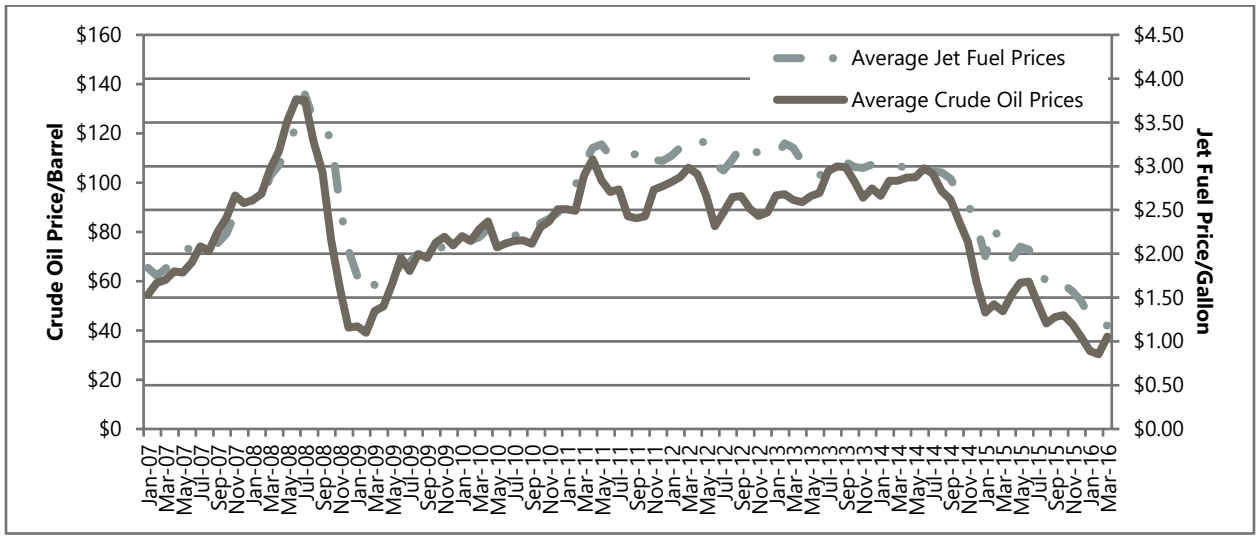
3.2.5 COST OF AVIATION FUEL

The price of fuel is one of the most significant and volatile expenses for airlines. Historically, fuel has been the first- or second-largest operating expense for the airline industry, shifting with labor cost. As of the third quarter of 2015, despite decreasing fuel costs, fuel was the largest operating expense for the airline industry, representing 28.0 percent of operating expenses. **Exhibit 3-5** shows the quarterly average prices of jet fuel

and crude oil from January 2007 through March 2016. Since 2007, the average monthly price of jet fuel fluctuated between a high of $3.82 per gallon in July 2008 to a low of $1.18 in March 2016.

Fluctuating fuel costs will continue to impact airline profitability, and this could lead to changes in air service as airlines restructure air service to address increases or decreases in the cost of fuel.

Exhibit 3-5: Historical Monthly Averages of Jet Fuel and Crude Oil Prices



SOURCES: U.S. Bureau of Transportation Statistics, May 2016 (Average Jet Fuel Prices); U.S. Energy Information Administration, May 2016 (Average Crude Oil Prices).

PREPARED BY: Ricondo & Associates, Inc., May 2016.

3.2.6 THREAT OF TERRORISM AND GEOPOLITICAL ISSUES

Since September 11, 2001, the recurrence of terrorism incidents against either domestic or world aviation remains a risk to achieving the activity forecasts contained in this report. Tighter security measures have restored the public's confidence in the safety of U.S. and world air travel. However, any terrorist incident aimed at aviation could impact demand for aviation services.

Additionally, geopolitical issues may affect aviation demand during the forecast period. Potential governmental or regional instability in certain countries or locations may affect access to, or demand for, aviation service in these places. Future governmental or regional instability could also impact demand for international aviation service at the Airport.

3.2.7 OPERATIONAL CAPACITY OF THE NATIONAL AIRSPACE SYSTEM

A significant concern of the FAA is how increased delays at busy airports impact the efficiency of the National Airspace System. In its January 2015 Airport Capacity Needs in the National Airspace System report, the FAA

stated the need to address delays that remain at key airports since its 2007 assessment and to implement NextGen airspace system improvements. The report emphasized the need to continue to invest in system improvements with airfield enhancements and NextGen capabilities.

3.2.8 COMPETING AIRPORTS

Other airports serving passengers in the southwest Florida region include Florida Keys Marathon Airport (MTH), located in Marathon, Florida, approximately 50 miles northeast of EYW; Miami International Airport (MIA), located in Miami, Florida, approximately 160 miles northeast of EYW; and Fort Lauderdale-Hollywood International Airport (FLL), located approximately 190 miles northeast of EYW. While MTH was previously a commercial service airport similar in traffic composition to EYW, it is now a general aviation airport, with no scheduled passenger service; therefore, it has little current potential leakage to or from EYW. FLL is a commercial service airport that is the largest base for Spirit Airlines; it is also a focus airport for Allegiant Air, JetBlue Airways, and Southwest Airlines. FLL is also the location of Silver Airways' headquarters. These airlines typically offer lower fares than mainline airlines, so passengers may opt to fly out of FLL for the lower fares. In contrast to FLL, MIA serves as a hub for American Airlines; as a major hub, it has historically served a greater component of connecting passengers that use MIA as a waypoint on journeys between two other airports, as opposed to using it as their originating or terminating airport. Passengers may choose to fly out of MIA for the greater number of destinations and airlines offered.

Table 3-14 presents a comparison of the average O&D domestic fares at EYW, MIA, and FLL since 2006. At no point in the past 10 years has the average domestic fare at EYW been lower than those at MIA or FLL. Of the three airports, FLL has had the lowest average fare every year since 2006, primarily due to its status as a focus city for low-cost carriers and the lack of a single dominant airline, such as American Airlines at MIA.

Table 3-14: Average Domestic O&D Fare at EYW, MIA, and FLL

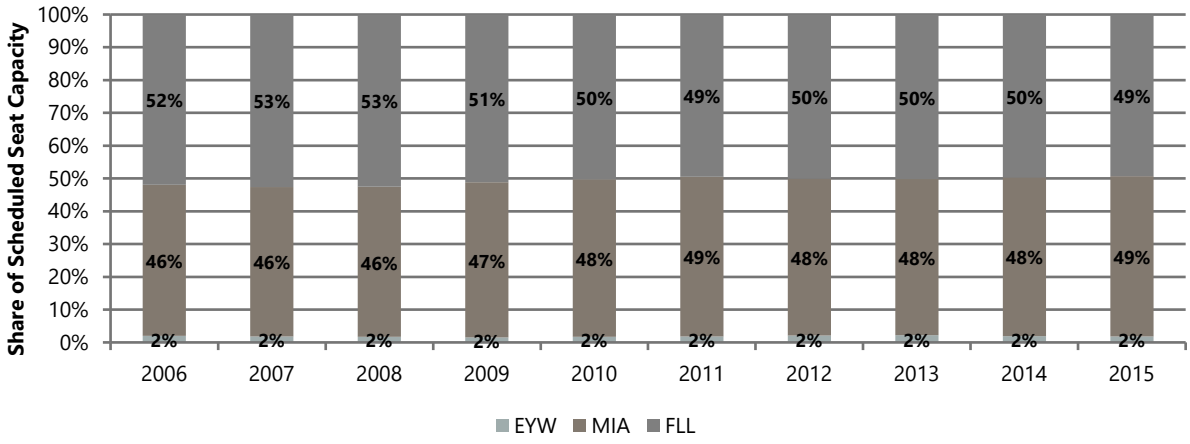
YEAR	KEY WEST (EYW)	MIAMI (MIA)	FORT LAUDERDALE (FLL)
2006	$158	$147	$123
2007	$178	$153	$124
2008	$202	$165	$129
2009	$189	$151	$119
2010	$188	$162	$128
2011	$188	$172	$138
2012	$194	$181	$142
2013	$197	$187	$149
2014	$214	$199	$154
2015	$232	$190	$143

SOURCE: U.S. Department of Transportation, DB1B Survey, March 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

With a drive time of fewer than four hours between EYW and FLL and between EYW and MIA, and cheaper fares to FLL and MIA than EYW, many passengers choose to fly into FLL or MIA and drive to EYW. According to the Monroe County Tourist Development Council, in a survey conducted from January to June 2013, 45 percent of visitors to the Florida Keys flew to Miami and rented a car, and 11 percent flew to another Florida airport and rented a car for their visit.[12] However, the relative aviation activity among the three airports showed little change from 2006 to 2015, suggesting limited leakage beyond what occurs currently.

Exhibit 3-6 presents the proportions of scheduled domestic seat capacity among EYW, MIA, and FLL. The total share of scheduled seat capacity at EYW has consistently been approximately 2 percent from 2006 to 2015, while MIA has been gaining a slight proportion of scheduled domestic seat capacity compared to FLL, with the two airports each having approximately 49 percent in 2015. Overall, however, the share of scheduled seats has not varied significantly among the airports.

Exhibit 3-6: Proportion of Historical Scheduled Seat Capacity at EYW, MIA, and FLL



NOTE: Figures may not sum to 100 percent due to rounding.

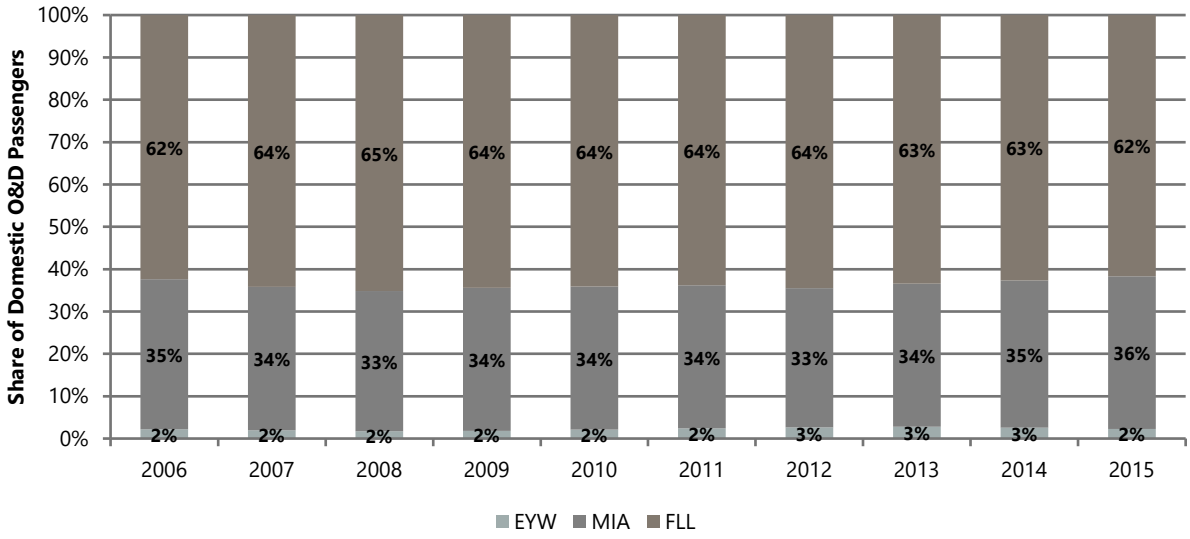
SOURCE: U.S. Department of Transportation, DB1B Survey, September 2015.
PREPARED BY: Ricondo and Associates, Inc., September 2015.

Exhibit 3-7 presents the proportions of domestic O&D passengers among EYW, MIA, and FLL. The share of domestic O&D passengers at EYW remained between 2 percent and 3 percent from 2006 to 2015, but it has averaged nearly 3 percent since 2011. The shares of domestic O&D passengers at FLL and MIA have also

[12] Monroe County Tourist Development Council, *Visitor Profile Survey: Monroe County – Calendar Year 2013 by Quarter*, http://www.monroecounty-fl.gov/DocumentCenter/Home/View/6956 (accessed June 1, 2016).

remained consistent from 2006 to 2015 relative to EYW: in 2015, FLL and MIA accounted for 62 percent and 36 percent, respectively, of domestic O&D passengers at the three airports.

Exhibit 3-7: Proportion of Historical Domestic O&D Passengers at EYW, MIA, and FLL



NOTE: Figures may not sum to 100 percent due to rounding.

SOURCE: U.S. Department of Transportation, DB1B Survey, March 2016.
PREPARED BY: Ricondo and Associates, Inc., March 2016.

3.3 Passenger Airline Forecast Methodology and Results

3.3.1 PASSENGER AIRLINE FORECAST OVERVIEW

The Airport primarily serves the domestic aviation market and accounts for approximately 0.05 percent of total U.S. enplaned passengers. Throughout the last decade, EYW has been characterized by a fragmented market share, with nonstop air service provided to hub airports of the various airlines serving EYW and to several regional markets. Traffic at the Airport is largely O&D and primarily comprises visiting or nonresident passengers.

It is expected that over the forecast period, EYW will continue to operate primarily as an O&D airport and that passenger demand growth will be accommodated by airline seat capacity and frequency growth mainly to and from existing nonstop destinations. Demand growth is expected to materialize as a result of

socioeconomic demand-related market forces, both in top destination markets from the Airport[13] and in the broader United States. **Exhibit 3-8** shows the Airport's domestic O&D demand since 2006, both in terms of passenger volume and passenger revenue, along with U.S. GDP. Domestic O&D revenue and passengers at the Airport both declined with U.S. GDP from 2006 to 2009, though at a faster rate. As the economy recovered after the recession, domestic O&D revenue and passengers also grew; however, since 2013, domestic O&D passengers at the Airport have been declining, while both domestic O&D revenue and U.S. GDP continue to grow. This is indicative of the effects of airline industry capacity discipline in an improving economic environment, as described in Section 2.2.4. Similar results were found with other socioeconomic variables; therefore, passenger demand was forecast in terms of O&D revenue. In examining future demand growth at the Airport, estimates were made as to how passenger revenue growth will materialize between its two components, passenger fare growth and passenger volume growth.

Exhibit 3-8: Domestic O&D Passenger Volume and Passenger Revenue Trends at EYW



NOTES: EYW Domestic O&D Revenue and U.S. GDP are inflation-adjusted. Passenger volumes do not include nonrevenue passengers.

SOURCE: U.S. Department of Transportation, DB1B Survey, May 2016.
PREPARED BY: Ricondo & Associates, Inc., May 2016.

3.3.2 PASSENGER AIRLINE FORECAST METHODOLOGY

Several methodologies were employed to forecast enplaned passengers, passenger aircraft operations, and the passenger aircraft fleet mix at the Airport. These methodologies are discussed for three time periods: the short-term (2016–2020), the medium-term (2021–2025), and the long-term (2026–2035).

[13] Top destination markets from the Airport, by O&D passengers, include Atlanta (ATL), Boston (BOS), Chicago (ORD and MDW), Fort Lauderdale (FLL), New York City/Newark (EWR, JFK, and LGA), Orlando (MCO), Philadelphia (PHL), Tampa (TPA), and Washington, D.C. (BWI, DCA, and IAD).

3.3.2.1 Short-Term Methodology (2016–2020)

Published airline schedules for 2016 were analyzed, and flight segment-level estimates of performance were developed based on trends of load factors and completion rates (the number of flights scheduled compared to the number of flights completed). These completion rates were identified through analysis of U.S. Department of Transportation enplanement and O&D data. Estimates of load factor and completion rates were applied to scheduled capacity in order to derive enplaned passenger and operations forecasts for 2016.

For the 2017 through 2020 period, air service profiles were developed (number of operations and seat capacity) using 2016 service levels and performance as a baseline reference. Passenger activity in 2016, both O&D and connecting passengers (a minimal component), was used as a baseline and grown using forecasts of growth derived through socioeconomic regression analysis. Greater detail on the use of socioeconomic regression modeling is presented in Section 2.3.2.4.

3.3.2.2 Medium-Term Methodology (2021-2025)

Forecasts of underlying passenger demand for the period from 2021 through 2025 were developed using socioeconomic regression analysis, as described in Section 2.3.2.4. Forecasts of passenger demand were combined with estimates of airline capacity deployment (such as airline per-departure seat capacity and average load factors), resulting in forecasts of passenger airline operations. The expectations of airline capacity deployment were developed through analysis of fleet plans, airline industry performance trend analysis, and analysis of possible new air service opportunities.

3.3.2.3 Long-Term Methodology (2026–2035)

Similar to the approach taken for the medium-term, underlying passenger demand forecasts were developed for the long-term period (2026–2035) using socioeconomic regression analysis. Forecasts of passenger demand were combined with estimates of airline capacity deployment, which resulted in forecasts of passenger airline operations. The expectations of airline capacity deployment were developed through analysis of fleet plans, airline industry performance trends, and possible new air service opportunities.

3.3.2.4 Socioeconomic Regression Analysis to Estimate Future Growth

Longer-term passenger demand growth rates at the Airport were derived using socioeconomic regression analysis. Socioeconomic regression analysis is used to identify causal relationships between a dependent variable (e.g., passenger volume) and one or more independent variables (e.g., socioeconomic factors, such as population, employment, per capita personal income, etc.). These relationships, or regression models, can be employed to forecast future growth in aviation activity using projections of independent variables. A standard measure of how well each socioeconomic variable explains passenger demand is the regression model's coefficient of determination, or R-squared. A result of 100 percent is the maximum value possible for a coefficient of determination, and it represents a perfect fit between the variables analyzed. For purposes of this analysis, an R-squared value of 75 percent or better was considered adequate.

Socioeconomic regression analysis was conducted to identify causal relationships between EYW passenger demand and socioeconomic variables at the national level and for the Air Trade Area. Forecasts were

developed using these regression models that incorporated independent projections of the relevant socioeconomic variables. The Airport primarily serves originating passengers who reside in or visit the Air Trade Area. With the Airport's high proportion of visiting passengers, demand for air service is driven by factors directly related to the demographic and economic characteristics of the points of origin for most passengers[14] and the nation. As such, the following three socioeconomic variables were analyzed separately as independent variables in the regression analyses, for both the nation and the top markets to/from EYW: population, income, and gross regional/domestic product. Historical and projected data for these independent variables were obtained from Woods & Poole Economics, Inc.

The historical and projected socioeconomic data are shown in **Table 3-15**. Airline capacity discipline has resulted in fewer, yet higher fare-paying passengers, since that business model was introduced during the economic recession. This environment has enabled airlines to improve their financial results by increasing passenger revenues without greatly increasing passenger volumes. The capacity discipline model has resulted in the breakdown of historical relationships between socioeconomic growth and increasing domestic passenger volumes. Relationships between passenger volumes and the socioeconomic variables depicted in Table 2.3-1 were explored. The best relationship between domestic O&D passenger volumes and socioeconomic variables (specifically U.S. GDP) exhibited an R-squared value of 0.70, which is below the 0.75 minimum value considered acceptable for use in the forecast.

In an effort to identify stronger relationships between socioeconomic variables and passenger demand at the Airport, socioeconomic regression analysis was undertaken to identify causal relationships between socioeconomic variables and domestic passenger revenues. Four relationships with R-squared values greater than 0.80 were identified, leading to higher confidence in the relationships than those found using O&D passengers as a measure of demand. The four strongest relationships produced a forecast 20-year CAGR for passenger revenue that ranged between 2.0 percent and 2.6 percent.

To convert passenger revenue growth to passenger volume growth, analysis of several U.S. airports comparable to EYW—chosen based on similarities in market size, competitive characteristics, and passenger traffic composition—was undertaken.[15] Similar to EYW, these airports have experienced disproportionately high domestic passenger revenue growth relative to domestic passenger volume growth. However, these airports have shown a reversal in the passenger fare to passenger volume trend, and revenue growth has

[14] Top destination markets from the Airport, by O&D passengers, include Atlanta (ATL), Boston (BOS), Chicago (ORD and MDW), Fort Lauderdale (FLL), New York City/Newark (EWR, JFK, and LGA), Orlando (MCO), Philadelphia (PHL), Tampa (TPA), and Washington, D.C. (BWI, DCA, and IAD).

[15] Airports with between 150,000 and 630,000 enplaned passengers in 2014, and at least 51 percent destination passengers for each year from 2004 through 2014, were chosen for comparison: Nantucket Memorial (ACK), Pitkin County (ASE), Rafael Hernandez (BQN), Yellowstone International (BZN), Daytona Beach Regional (DAB), La Plata (DRO), Eagle County Regional (EGE), Glacier Park International (FCA), Hilo International (ITO), Jackson Hole (JAC), Sarasota-Bradenton (SRQ), Henry E. Rohlsen (STX), and Destin-Ft. Walton Beach (VPS).

recently been driven by increasing passenger volumes. In these peer airports, approximately 60 percent of revenue growth can be attributed to passenger growth and 40 percent can be attributed to average fare growth. This ratio of passenger growth to fare growth has been applied to the EYW revenue forecasts to derive passenger volume forecasts. Results of the regression analyses with R-squared values above 0.80 are presented in **Table 3-16**.

Table 3-15 (1 of 2): Historical and Projected Socioeconomic Characteristics

	INDEPENDENT SOCIOECONOMIC VARIABLES								
	UNITED STATES OF AMERICA			TOP DESTINATION MARKETS[1/]			EYW AIR SERVICE AREA		
YEAR	TOTAL POPULATION[2/]	TOTAL PERSONAL INCOME[3/]	TOTAL GDP[3/]	TOTAL POPULATION[2/]	TOTAL PERSONAL INCOME[3/]	TOTAL GRP[3/]	TOTAL POPULATION[2/]	TOTAL PERSONAL INCOME[3/]	TOTAL GRP[3/]
Historical									
2006	298,380	11,883,038	14,028,843	53,546	2,574,974	3,251,861	74	4,220	3,521
2007	301,231	12,256,151	14,352,564	53,934	2,607,895	3,281,688	73	4,162	3,505
2008	304,094	12,443,868	14,184,185	54,322	2,640,815	3,311,515	73	4,104	3,489
2009	306,772	11,852,751	13,869,679	54,710	2,673,735	3,341,341	73	4,045	3,472
2010	309,330	12,108,318	14,154,695	55,097	2,706,656	3,371,168	73	3,987	3,456
2011	311,583	12,664,566	14,816,834	55,523	2,792,124	3,384,867	74	3,962	3,367
2012	313,874	13,080,341	15,218,600	55,913	2,861,392	3,462,445	75	4,123	3,430
2013	316,129	13,184,706	15,514,792	56,284	2,865,604	3,504,832	76	4,114	3,438
2014	318,699	13,501,635	15,892,855	56,649	2,929,788	3,583,327	77	4,244	3,599
Projected									
2015[4/]	321,449	13,829,017	16,261,994	57,044	2,994,777	3,661,997	77	4,336	3,688
2016	324,392	14,160,640	16,632,973	57,472	3,060,504	3,741,028	78	4,428	3,777
2017	327,372	14,498,205	17,005,442	57,904	3,127,208	3,820,220	78	4,520	3,866
2018	330,383	14,845,792	17,382,455	58,340	3,195,732	3,900,289	78	4,614	3,955
2019	333,427	15,204,916	17,765,537	58,780	3,266,360	3,981,510	79	4,710	4,046
2020	336,500	15,576,939	18,155,067	59,222	3,339,333	4,063,939	79	4,809	4,137
2021	339,602	15,953,666	18,550,436	59,668	3,413,134	4,147,512	80	4,908	4,230
2022	342,734	16,340,432	18,950,272	60,117	3,488,657	4,231,825	80	5,009	4,323
2023	345,892	16,730,551	19,353,691	60,568	3,564,626	4,316,670	81	5,110	4,417
2024	349,078	17,122,537	19,760,977	61,023	3,640,744	4,402,091	81	5,211	4,512
2025	352,281	17,524,039	20,171,743	61,478	3,718,465	4,488,038	82	5,313	4,608
2026	355,498	17,924,123	20,585,046	61,933	3,795,747	4,574,257	82	5,415	4,704

Table 3-15 (2 of 2): Historical and Projected Socioeconomic Characteristics

	INDEPENDENT SOCIOECONOMIC VARIABLES								
	UNITED STATES OF AMERICA			TOP DESTINATION MARKETS[1/]			EYW AIR SERVICE AREA		
YEAR	TOTAL POPULATION[2/]	TOTAL PERSONAL INCOME[3/]	TOTAL GDP[3/]	TOTAL POPULATION[2/]	TOTAL PERSONAL INCOME[3/]	TOTAL GRP[3/]	TOTAL POPULATION[2/]	TOTAL PERSONAL INCOME[3/]	TOTAL GRP[3/]
2027	358,726	18,321,113	21,001,199	62,389	3,872,251	4,660,787	82	5,515	4,800
2028	361,960	18,718,520	21,420,447	62,843	3,948,615	4,747,663	83	5,614	4,896
2029	365,205	19,116,811	21,842,960	63,297	4,024,932	4,834,899	83	5,712	4,993
2030	368,462	19,510,989	22,268,693	63,751	4,100,286	4,922,470	84	5,809	5,090
2031	371,612	19,894,862	22,704,264	64,180	4,173,171	5,010,960	84	5,902	5,188
2032	374,761	20,278,736	23,139,836	64,609	4,246,057	5,099,451	85	5,994	5,285
2033	377,910	20,662,609	23,575,408	65,038	4,318,942	5,187,941	85	6,086	5,383
2034	381,059	21,046,482	24,010,980	65,467	4,391,828	5,276,431	85	6,179	5,481
2035	384,208	21,430,356	24,446,551	65,896	4,464,713	5,364,922	86	6,271	5,578
Compound Annual Growth Rate									
2014–2020	0.9%	2.4%	2.2%	0.7%	2.2%	2.1%	0.6%	2.1%	2.4%
2021–2025	0.9%	2.4%	2.1%	0.7%	2.2%	2.0%	0.6%	2.0%	2.2%
2026–2035	0.9%	2.0%	1.9%	0.7%	1.8%	1.8%	0.5%	1.6%	1.9%
2014–2035	0.9%	2.2%	2.1%	0.7%	2.0%	1.9%	0.5%	1.9%	2.1%

NOTES:

GDP – Gross Domestic Product

GRP – Gross Regional Product

1/ Top non-Florida destination markets, by O&D passengers: Atlanta (ATL), Boston (BOS), Chicago (ORD and MDW), New York City/Newark (EWR, JFK, and LGA), Philadelphia (PHL), and Washington, D.C. (BWI, DCA, and IAD).

2/ In thousands.

3/ In millions of 2009 U.S. Dollars.

4/ Socioeconomic data for 2015 are forecast by Woods & Poole Economics, Inc.

SOURCE: Woods & Poole Economics, Inc., March 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

Table 3-16: Regression Model Outputs and Forecast Growth Rates of Passengers and Passenger Revenues through 2035 Compared to Federal Aviation Administration Forecasts of U.S. Enplanement Growth

DEMAND ELEMENT	INDEPENDENT VARIABLE	R-SQUARED (TIMES 100)	DOMESTIC O&D REVENUE GROWTH (2015–2035 CAGR)	ENPLANED PASSENGER GROWTH (2015–2035 CAGR)
EYW Domestic O&D Passenger Revenue	U.S. GDP	87.5	3.9%	2.4%
	U.S. Personal Income	83.8	4.1%	2.5%
	Top Markets Personal Income	87.4	4.4%	2.6%
	Top Markets Population	82.9	3.3%	2.0%
	Average		3.9%	2.4%
U.S. Passenger Enplanements (FAA Aerospace Forecast)			N/A	2.2%
U.S. Passenger Enplanements (FAA National Terminal Area Forecast)			N/A	1.9%

NOTE:

N/A – Not Applicable

SOURCES: Woods & Poole Economics, Inc., March 2016; Ricondo & Associates, Inc., March 2016 (Analysis); Federal Aviation Administration, *2015 Terminal Area Forecast*, March 2016; Federal Aviation Administration, *2016-2036 Aerospace Forecast*, March 2016.

PREPARED BY: Ricondo & Associates, Inc., March 2016.

3.3.2.5 Other Assumptions

Activity forecasts for the Airport are based on a number of other underlying assumptions of national aviation trends and national and regional economic conditions. In particular:

- The Airport will continue to primarily serve O&D passengers, with no airline developing a base of operations with the goal of serving a combination of O&D and connecting passenger demand.
- Competition with other airports in or near the EYW Air Service Area is expected to remain stable, with no structural advantages or disadvantages occurring relative to other regional airports.
- Additional airline consolidation/mergers that may occur during the forecast period are not likely to negatively affect numbers of enplaned passengers at the Airport. New airline alliances, should they develop, would be restricted to code-sharing and joint frequent-flyer programs and would not reduce airline competition at the Airport.
- For this analysis, and similar to the FAA's nationwide forecasts, it was assumed that there will be no terrorist incidents during the forecast period that would have significant, negative, and prolonged effects on aviation demand at the Airport or nationwide.
- Economic disturbances will occur during the forecast period, causing year-to-year variations in airline traffic; however, long-term increases in nationwide and Airport traffic are forecast.
- It was assumed that no major "acts of God" that may disrupt the national or global airspace system, such as the 2010 volcanic eruption in Iceland, will occur during the forecast period that would negatively affect aviation demand.

Many of the factors influencing aviation demand cannot readily be quantified, and any forecast is subject to uncertainties; as a result, the forecast process should not be viewed as precise. Actual airline traffic at the Airport may differ from the forecasts presented herein, because events and circumstances may not occur as expected, and these differences may be material.

3.3.3 ENPLANED PASSENGER AND AIRLINE OPERATIONS FORECASTS

Table 3-17 presents historical and forecast enplaned passengers, with detail on O&D and connecting passenger components. **Table 3-18** presents historical and forecast enplaned passengers with detail on mainline airline and regional airline shares. **Table 3-19** presents historical and forecast enplaned passengers along with associated operations, average load factors, and average aircraft seat capacity. Specific assumptions and points regarding enplaned passenger and passenger airline operations forecasts for the short-term (2015 to 2020), medium-term (2021 to 2025), and long-term (2026 to 2035) periods are discussed in the following subsections.

3.3.3.1 Forecast Short-Term Enplaned Passengers and Airline Operations (2016–2020)

Enplaned passengers are forecast to grow 3.6 percent annually between 2015 (the base year) and 2020, from 362,802 in 2015 to 433,318 in 2020. During the same period, passenger airline operations are forecast to grow 3.4 percent annually, from 18,651 in 2015 to 22,056 in 2020.

Throughout the short-term period, passenger growth is captured through a growth in operations. While average seat capacity is expected to grow for scheduled passenger airlines, as they replace regional jet aircraft with small narrowbody aircraft on routes with sufficient demand, overall average seat capacity is expected to remain between 50.2 and 50.5 seats per departure, due to increased operations by Silver Airways and nonscheduled charter airlines with small aircraft. **Table 3-20** presents EYW's current (2015) and forecast aircraft fleet mix categorized into five groups of average seat capacity. Through 2020, it is expected that aircraft having 100 or fewer seats will comprise approximately 86 percent of total passenger airline operations, similar to the approximately 86 percent share of operations in 2015. Operations in aircraft with between 51 and 76 seats are expected to decline from approximately 8 percent in 2015 to about 6 percent in 2020, as mainline airlines replace regional jet operations with small narrowbody operations and the smaller regional airlines at the Airport continue to use aircraft with 50 or fewer seats. Average passenger aircraft seat capacity is forecast to grow from 49.6 in 2015 to 50.2 in 2020. Load factors are forecast to remain generally constant at approximately 77 percent. In the short-term period, the split of enplaned passengers served by mainline and regional airlines is forecast to change minimally, as the regional airlines' share declines slightly from 69.4 percent in 2015 to 66.6 percent in 2016, due to an expected increase in mainline operations by Delta Air Lines relative to regional operations by American Airlines and Silver Airways at the Airport.

Table 3-17: Historical and Forecast O&D and Connection Demand

YEAR	O&D ENPLANED PASSENGERS	O&D PERCENT OF TOTAL	PASSENGER CONNECTIONS	CONNECTION PERCENT OF TOTAL	TOTAL AIRPORT ENPLANED PASSENGERS
Historical					
2006	283,965	99.4%	1,839	0.6%	285,804
2007	270,418	99.6%	1,214	0.4%	271,632
2008	231,466	99.5%	1,086	0.5%	232,552
2009	234,398	99.8%	489	0.2%	234,887
2010	286,437	99.5%	1,412	0.5%	287,849
2011	333,841	99.4%	1,859	0.6%	335,700
2012	368,104	99.2%	2,855	0.8%	370,959
2013	399,131	98.9%	4,241	1.1%	403,372
2014	380,126	98.8%	4,537	1.2%	384,663
2015	360,664	99.4%	2,138	0.6%	362,802
Forecast					
2016	388,730	99.4%	2,305	0.6%	391,035
2020	430,764	99.4%	2,554	0.6%	433,318
2025	482,844	99.4%	2,863	0.6%	485,707
2035	577,053	99.4%	3,421	0.6%	580,474
Compound Annual Growth Rate					
2006–2015	2.7%		1.7%		2.7%
2015–2020	3.6%		3.6%		3.6%
2021–2025	2.3%		2.3%		2.3%
2026–2035	1.8%		1.8%		1.8%
2015–2035	2.4%		2.4%		2.4%

NOTE: Passenger totals do not include nonrevenue passengers.

SOURCES: U.S. Department of Transportation, T-100, March 2016; U.S. Department of Transportation, DB1B Survey, March 2016; Ricondo & Associates, Inc., March 2016 (Forecast).

PREPARED BY: Ricondo & Associates, Inc., March 2016.

Table 3-18: Historical and Forecast Mainline and Regional Passenger Airline Enplaned Passengers

YEAR	MAINLINE PASSENGERS	MAINLINE SHARE OF TOTAL	REGIONAL AIRLINE PASSENGERS	REGIONAL SHARE OF TOTAL	TOTAL AIRLINE PASSENGERS
Historical					
2006	4,733	1.7%	281,071	98.3%	285,804
2007	0	0.0%	271,632	100.0%	271,632
2008	0	0.0%	232,552	100.0%	232,552
2009	2,647	1.1%	232,240	98.9%	234,887
2010	65,343	22.7%	222,506	77.3%	287,849
2011	140,356	41.8%	195,344	58.2%	335,700
2012	158,045	42.6%	212,914	57.4%	370,959
2013	213,594	53.0%	189,778	47.0%	403,372
2014	176,106	45.8%	208,557	54.2%	384,663
2015	111,151	30.6%	251,651	69.4%	362,802
Forecast					
2016	130,844	33.5%	260,191	66.5%	391,035
2020	144,665	33.4%	288,653	66.6%	433,318
2025	172,480	35.5%	313,227	64.5%	485,707
2035	188,235	32.4%	392,239	67.6%	580,474
Compound Annual Growth Rate					
2006–2015	42.0%		-1.2%		2.7%
2015–2020	5.4%		2.8%		3.6%
2021–2025	3.5%		1.6%		2.3%
2026–2035	0.8%		2.2%		1.8%
2015–2035	2.7%		2.2%		2.4%

NOTES: Passenger totals do not include nonrevenue passengers. Charter service is included in the regional airline category.

SOURCES: U.S. Department of Transportation, T-100, March 2016; Ricondo & Associates, Inc., March 2016 (Forecast).

PREPARED BY: Ricondo & Associates, Inc., March 2016.

Table 3-19: Historical and Forecast Passenger Airline Operations

YEAR	ENPLANED PASSENGERS	GROWTH	AVERAGE LOAD FACTOR	AVERAGE SEATS PER DEPARTURE	PASSENGER AIRLINE OPERATIONS	GROWTH
Historical						
2006	285,804		64.2%	33.8	25,715	
2007	271,632	-5.0%	65.1%	34.3	23,698	-7.8%
2008	232,552	-14.4%	64.2%	33.4	21,043	-11.2%
2009	234,887	1.0%	74.3%	37.6	16,279	-22.6%
2010	287,849	22.5%	73.6%	42.0	18,087	11.1%
2011	335,700	16.6%	80.3%	50.7	15,965	-11.7%
2012	370,959	10.5%	76.9%	48.0	19,566	22.6%
2013	403,372	8.7%	77.6%	51.3	19,718	0.8%
2014	384,663	-4.6%	82.5%	49.6	18,267	-7.4%
2015	362,802	-5.7%	76.2%	49.6	18,651	2.1%
Forecast						
2016	391,035	7.8%	76.5%	50.5	19,902	6.7%
2020	433,318	2.5%	77.0%	50.2	22,056	2.7%
2025	485,707	2.2%	77.5%	54.0	22,832	0.7%
2035	580,474	1.5%	78.0%	59.7	24,498	0.6%
Compound Annual Growth Rate						
2006–2015	2.7%			4.4%	-3.5%	
2015–2020	3.6%			0.2%	3.4%	
2021–2025	2.3%			1.5%	0.6%	
2026–2035	1.8%			1.0%	0.7%	
2015–2035	2.4%			0.9%	1.4%	

NOTES:

1/ Includes nonscheduled (charter) service.

2/ Passenger totals do not include nonrevenue passengers.

SOURCES: U.S. Department of Transportation, T-100, March 2016; Innovata, March 2016; Ricondo & Associates, Inc., May 2016 (Forecast).
PREPARED BY: Ricondo & Associates, Inc., May 2016.

Table 3-20: Historical and Forecast Operations Fleet Mix

AIRCRAFT CATEGORY	SEAT RANGE	2015 OPERATIONS	2015 PERCENT	2016 OPERATIONS	2016 PERCENT	2020 OPERATIONS	2020 PERCENT	2025 OPERATIONS	2025 PERCENT	2035 OPERATIONS	2035 PERCENT
Passenger											
Small Piston/Turboprop/Regional Jet	<51	10,204	55%	11,167	56%	12,667	57%	10,525	46%	1,588	6%
Medium Regional Jet/Turboprop	51-76	1,527	8%	1,247	6%	1,299	6%	2,649	12%	11,022	45%
Large Regional Jet/Turboprop	77-100	4,399	24%	4,983	25%	4,999	23%	5,061	22%	5,337	22%
Small Narrowbody	101-130	2,521	14%	2,505	13%	2,334	11%	2,985	13%	1,531	6%
Medium Narrowbody	131-150	0	0%	0	0%	757	3%	1,612	7%	5,020	20%
Large Narrowbody/Widebody	151+	0	0%	0	0%	0	0%	0	0%	0	0%
Total		18,651	100%	19,902	100%	22,056	100%	22,832	100%	24,498	100%
Cargo											
Small Piston/Turboprop		729	100%	754	100%	854	100%	984	100%	1,247	100%
General Aviation											
Single Engine		20,716	72%	N/A	N/A	20,743	68%	21,180	66%	21,612	60%
Multi-Engine		5,436	19%	N/A	N/A	6,742	22%	7,705	24%	10,569	29%
Jet		1,974	7%	N/A	N/A	2,399	8%	2,901	9%	3,668	10%
Rotocraft		486	2%	N/A	N/A	486	2%	451	2%	472	1%
Other		0	0%	N/A	N/A	0	0%	0	0%	0	0%

NOTES:

N/A – Not Applicable

Table does not include other air taxi or military operations.

SOURCES: U.S. Department of Transportation, T-100, April 2016; Innovata, April 2016; Ricondo & Associates, Inc., May 2016 (Forecast); McFarland Johnson, Inc., May 2016 (GA Fleet Mix).
PREPARED BY: Ricondo & Associates, Inc., May 2016.

3.3.3.2 Forecast Medium-Term Enplaned Passengers and Airline Operations (2021–2025)

Enplaned passengers for the period are forecast to grow at an average annual rate of 2.3 percent per year, from 443,898 in 2021 to 485,707 in 2025. Associated passenger airline operations are forecast to grow by 0.6 percent annually for the period, from 22,257 in 2021 to 22,832 in 2025.

Passenger growth in the medium-term period is forecast to be accommodated mostly by growth in average aircraft seat capacity. Similar to the short-term period, average load factors are expected to remain between 77.0 and 77.5 percent. Average aircraft seats per departure are forecast to grow from 50.9 in 2021 to 54.0 in 2025, which is expected as a result of the mainline airlines' continued trend away from aircraft with fewer than 50 seats. In addition, it is forecast that regional airlines at the Airport will replace smaller turboprop aircraft with larger versions as they retire aging fleets.

3.3.3.3 Forecast Long-Term Enplaned Passengers and Airline Operations (2026–2035)

Enplaned passengers for the long-term period are forecast to grow at an average annual rate of 1.8 percent per year, from 495,904 in 2026 to 580,474 in 2035. Associated passenger airline operations are forecast to increase by 0.7 percent annually for the period, from 23,065 in 2026 to 24,498 in 2035.

Passenger growth in the long-term period is forecast to be accommodated by the continued growth in average aircraft size. Average aircraft seat capacity is forecast to grow from 54.5 in 2026 to 59.7 in 2035. As passenger demand increases, it is expected that airlines will add flights on larger aircraft to hub destinations. Overall, the forecast proportion of operations on small or medium narrowbody aircraft with 101–150 seats is expected to be approximately 26 percent in 2035, up from approximately 14 percent in 2015. Similar to the short- and medium-term periods, average load factors are forecast to remain constant between 77.5 and 78.0 percent, as airlines are not expected to add capacity beyond the demand in the market.

For the period from 2015 to 2035, enplaned passengers are forecast to increase at a CAGR of 2.4 percent, while airline operations are forecast to increase at a CAGR of 1.4 percent.

3.3.4 CRITICAL AIRCRAFT

3.3.4.1 Definition

The FAA's current Standard Operating Procedure (SOP) for FAA Review and Approval of Airport Layout Plans (ALPs) defines the critical aircraft as "… the most demanding aircraft type, or grouping of aircraft with similar characteristics."[16] Federally funded projects require that the critical aircraft will make regular use of the airport in the planning period. Regular use means 500 or more annual itinerant operations or scheduled service.

[16] Federal Aviation Administration, *Advisory Circular 150/5000-XX (Draft)*, September 2015.

3.3.4.2 Existing Critical Aircraft

Based on current operations at the Airport, the existing critical aircraft is the Boeing 737 series of jets. Delta Air Lines operates a 124-seat Boeing 737-700 at the Airport, and there were a total of 2,087 operations with this aircraft at the Airport in 2015.[17] The Boeing 737 series of jets is classified as a C-III, according to the FAA's Airplane Design Group (ADG) classifications. Based on the outer-to-outer Main Gear Width (MGW) and Cockpit-to-Main-Gear distance (CMG), the Taxiway Design Group (TDG) of the Boeing 737 series is TDG III.[18]

3.3.4.3 Future Critical Aircraft

Based on the forecast fleet mix at the Airport, the future critical aircraft, through 2035, is forecast to be the Boeing 737 series of jets or the Airbus A319. Like the Boeing 737, the ADG for the Airbus 319 is C-III, and it is a TDG III aircraft.

3.4 All-Cargo Volumes and Operations Forecast

The forecast of cargo volume was developed using a combined socioeconomic regression and market share analysis.[19] Regression analysis was conducted to evaluate the relationship between total domestic cargo volumes at nine southern Florida airports[20] and local (Monroe County) and national (U.S.) socioeconomic variables. Several of the regressions between the socioeconomic variables and total cargo volumes exhibited reasonable R-squared values and, in combination, resulted in an average forecast of 2.7 percent compound annual growth across the south Florida airports.

The Airport's recent approximate 0.08 percent share of total cargo volumes among the nine airports was applied to the total forecast southern Florida cargo volumes in order to determine the forecast cargo volumes at EYW. All-cargo operations at EYW were forecast assuming the average cargo volume per operation would remain constant throughout the forecast period. As provided in **Table 3-21**, annual all-cargo volumes are forecast to grow from 968,408 pounds in 2015 to approximately 1.66 million pounds in 2035, a CAGR of 2.7. Annual all-cargo operations are forecast to grow from 729 in 2015 to 1,247 in 2035, a CAGR of 2.7.

17 United States Department of Transportation, T-100, July 2016.

18 Federal Aviation Administration, *Advisory Circular 150-5300-13A*, February 2014.

19 Excludes belly cargo, which comprise less than 0.3 percent of total cargo volumes at the Airport.

20 The airports included in the analysis were Dade Collier Airport (TNT), FLL, Kendall-Tamiami Executive Airport (TMB), EYW, MTH, MIA, Miami Sea Plane Base (MPB), Miami-Opa Locka Executive Airport (OPF), and Palm Beach International Airport (PBI).

Table 3-21: All-Cargo Volumes and All-Cargo Operations

YEAR	TOTAL CARGO VOLUME (lbs.)	CARGO VOLUME GROWTH	ALL-CARGO OPERATIONS	ALL-CARGO OPERATIONS GROWTH
Historical				
2006	1,136,820		866	
2007	1,122,379	-1.3%	858	-0.9%
2008	1,032,725	-8.0%	818	-4.7%
2009	957,560	-7.3%	706	-13.7%
2010	1,000,544	4.5%	711	0.7%
2011	880,430	-12.0%	660	-7.2%
2012	911,778	3.6%	672	1.8%
2013	994,252	9.0%	726	8.0%
2014	1,006,731	1.3%	743	2.3%
2015	968,408	-3.8%	729	-1.9%
Forecast				
2016	1,001,427	3.4%	754	3.4%
2020	1,134,451	3.1%	854	3.1%
2025	1,307,603	2.8%	984	2.8%
2035	1,656,479	2.2%	1,247	2.2%
Compound Annual Growth Rate				
2006–2015	-1.8%		-1.9%	
2015–2020	3.2%		3.2%	
2021–2025	2.9%		2.9%	
2026–2035	2.4%		2.4%	
2015–2035	2.7%		2.7%	

NOTE: Only includes all-cargo volumes and operations.

SOURCES: U.S. Department of Transportation, T-100, June 2016; Ricondo & Associates, Inc., June 2016 (Forecast).
PREPARED BY: Ricondo & Associates, Inc., June 2016.

3.5 General Aviation Forecast

This section presents the GA forecast analysis and supporting data completed for EYW. The following indicators of general aviation activity were forecast/projected to determine the types and sizes of GA facilities that should be planned to accommodate demand at the Airport:

- Number of Based Aircraft
- Based Aircraft Fleet Mix
- Annual Operations
- Peak Activity including peak month and peak day

3.5.1 PREVIOUS AVIATION ACTIVITY FORECASTS

Three previous forecasts were identified for use in this analysis and are briefly summarized in this chapter. These are the 2003 Master Plan Update, the 2015 Federal Aviation Administration (FAA) Terminal Area Forecast (TAF), and the 2013-2033 Florida Department of Transportation (FDOT) Florida Aviation System Plan (FASP). For comparison, actual based aircraft at EYW in 2015 were 58 and general aviation operations were approximately 28,300.

3.5.1.1 2003 Master Plan Update

The 2003 Key West International Airport Master Plan Update projects based aircraft from 56 to 67 between 2001 and 2021, respectively. **Table 3-22** shows based aircraft and annual general aviation operations as forecast in the 2003 Master Plan.

Table 3-22: 2003 Master Plan Forecasts

FISCAL YEAR (FY)	BASED AIRCRAFT	ANNUAL GENERAL AVIATION AIRCRAFT OPERATIONS
Base Year		
2001	56	46,640
Forecast		
2006	59	56,257
2011	61	60,523
2021	67	68,831

SOURCE: 2003 Key West International Airport Master Plan Update.
PREPARED BY: McFarland Johnson, Inc., May 2016.

3.5.1.2 FAA Terminal Area Forecast (TAF)

The 2015 FAA TAF is shown in **Table 3-23**. It shows based aircraft increasing at a rate of approximately 2.15 percent per year for the 20-year planning period. Similarly, general aviation aircraft operations are forecast to increase by approximately 1.7 percent per year to 29,194 in 2035.

Table 3-23: FAA Terminal Area Forecast

FISCAL YEAR (FY)	BASED AIRCRAFT	ANNUAL GENERAL AVIATION AIRCRAFT OPERATIONS
Base Year		
2015	66	28,300
Forecast		
2020	73	27,668
2025	81	28,166
2035	101	29,194
Average Annual Growth Rate	2.15%	1.73%

SOURCE: Federal Aviation Administration, *Terminal Area Forecast*, April 2016.
PREPARED BY: McFarland Johnson, Inc., May 2016.

3.5.1.3 FDOT Florida Aviation System Plan (FASP)

Table 3-24 shows the 2013-2033 Florida Aviation System Plan based aircraft and aircraft operations forecasts. Only general aviation aircraft operations are shown.

Table 3-24: 2013–2033 Florida Aviation System Plan (FASP)

YEAR	BASED AIRCRAFT	ANNUAL AIRCRAFT OPERATIONS
Base Year		
2015	68	35,157
Forecast		
2020	74	36,950
2025	79	38,835
2035	N/A	N/A
Average Annual Growth Rate	1.57%	1.0%

NOTE:
N/A – Not Applicable
SOURCE: Florida Department of Transportation, *Florida Aviation System Plan 2013-2033*, April 2016.
PREPARED BY: McFarland Johnson, Inc., May 2016.

3.5.2 FORECAST OF GENERAL AVIATION ACTIVITY

3.5.2.1 Forecasting Approach

Forecasts of aviation demand are a key element in all airport planning. Demand forecasts, based upon the characteristics of the service area and airport, provide a basis for determining the type, size, and timing of aviation facility development and are a platform upon which this master planning study is based. Consequently, these forecasts influence virtually all phases of the planning process.

This section presents the methodologies and assumptions used in the development of the GA aviation forecasts. To provide a useful planning tool, the projections are presented for short- (2015-2019), intermediate- (2020-2024), and long- (2025-2035) range time frames. These time frames will be used to develop the Airport's capital improvement program (ACIP).

The aviation demand forecasts will serve three primary purposes in the development of this Master Plan. Specifically, they provide the basis for:

- Determining the necessary capacity of the airfield, flight school, and ground access network serving the Airport.
- Identifying the needed size of future facilities and the type of expansion (if any) needed.
- Assessing the financial feasibility of alternative development scenarios.

3.5.2.2 Global and National Market Trends

Local socioeconomic factors alone cannot guarantee a predictable level of air operations. Growth in the overall U.S. aviation market is based on a variety of factors that are independent of the local market conditions. These external considerations have the ability to affect the overall market. Many of these factors are beyond the control of the airport itself and represent tangible considerations such as national economic conditions, implications of national and international geopolitical events, and changes in the cost of fuel.

Fuel prices are currently approaching a 7-year low while unemployment is five percent (October/November 2015). The last time unemployment was at five percent was prior to the Great Recession starting around 2007-2008. These factors could be an indicator of increased aviation activity.

On the other hand, geopolitical unrest could cause the reverse. General aviation activity may not be affected as much as commercial activity due to incidents of commercial and military planes becoming casualties of global terrorism and political unrest in the Middle East and northern Africa.

3.5.2.3 Forecast of Based Aircraft

Based aircraft forecasts serve an important role in the planning of future facilities at the Airport, particularly as it relates to features such as hangars and apron space. The based aircraft history according to the FAA TAF has ranged from 35 to 66 aircraft, as shown in **Table 3-25**. However, it should be noted that based on conversations with the Airport and FBO, 2015 based aircraft were counted at 58 rather than 66 as presented in the TAF. The base year will show 58 based aircraft for all forecasts.

Table 3-25: Historical Based Aircraft (FAA TAF)

YEAR	SINGLE	JET	MULTI	HELICOPTER	OTHER	TOTAL
1980	36	0	14	0	0	50
1981	37	0	14	0	0	51
1982	37	0	13	0	0	50
1983	37	0	13	0	0	50
1984	37	0	13	0	0	50
1985	37	0	13	0	0	50
1986	35	0	15	0	0	50
1987	35	0	15	0	0	50
1988	35	0	15	0	0	50
1989	35	0	15	0	0	50
1990	35	0	15	0	0	50
1991	35	0	15	0	0	50
1992	35	0	15	0	0	50
1993	35	0	15	0	0	50
1994	35	0	15	0	0	50
1995	35	0	15	0	0	50
1996	35	0	15	0	0	50
1997	35	0	15	0	0	50
1998	35	0	15	0	0	50
1999	35	0	15	0	0	50
2000	35	0	15	0	0	50
2001	22	0	13	0	0	35
2002	33	0	16	0	0	49
2003	35	0	16	0	0	51
2004	42	9	13	1	0	65
2005	40	4	17	0	0	61
2006	38	3	16	0	0	57
2007	30	1	12	0	0	43
2008	31	0	12	0	0	43
2009	30	0	11	0	0	41
2010	30	0	15	0	0	45
2011	34	0	18	0	0	52
2012	36	0	22	1	0	59
2013	39	0	21	1	0	61
2014	42	0	23	1	0	66
2015	42	0	23	1	0	66

SOURCE: Federal Aviation Administration, *Terminal Area Forecast*, April 2016.
PREPARED BY: McFarland Johnson, Inc., May 2016.

Forecast of Based Aircraft using Existing Forecasts

Table 3-26 shows the baseline 2015 based aircraft and forecast growth from the following three sources:

- FDOT Aviation System Plan (FASP) 2013-2033
- FAA Aerospace Forecast 2016-2036
- FAA TAF, April 2016

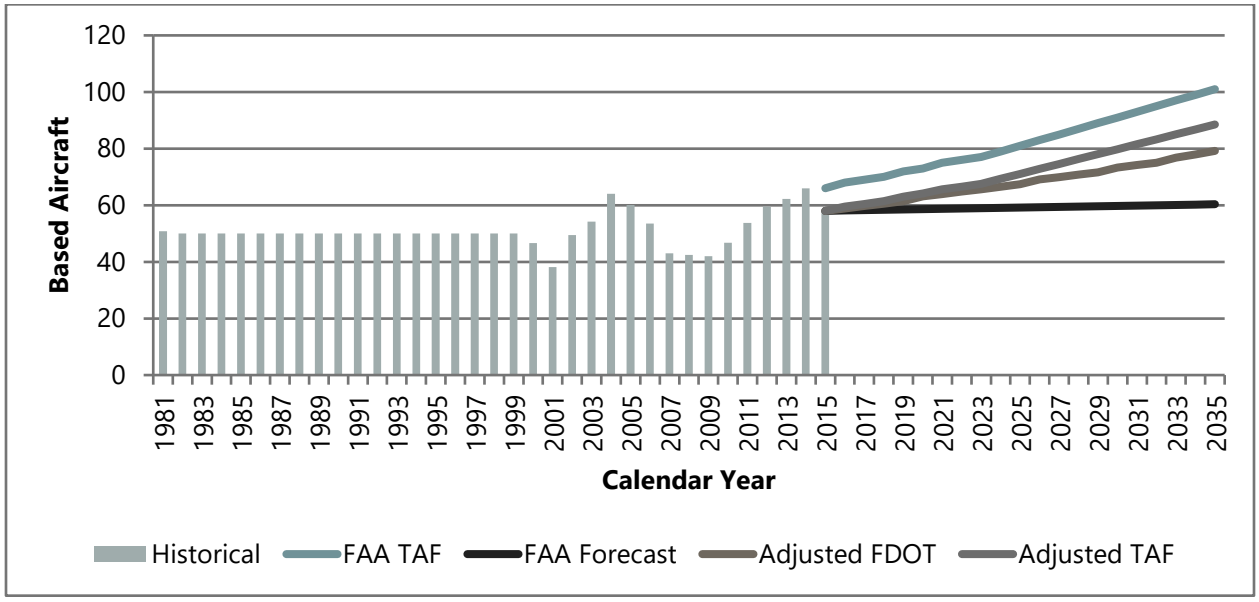
These numbers were adjusted to reflect the 2015 baseline of 58 based aircraft based on information provided by the Airport and as shown in **Exhibit 3-9**.

Table 3-26: Forecasts of Based Aircraft

YEAR	FDOT FASP	FAA AEROSPACE	FAA TAF
Baseline			
2015	68	58	66
Projected			
2020	74	59	73
2025	79	59	81
2035	N/A	60	101
Average Annual Growth Rate	**1.57%**	**0.2%**	**2.15%**

SOURCES: Federal Aviation Administration, *Terminal Area Forecast*, April 2016; Federal Aviation Administration, *FAA Aerospace Forecast Fiscal Years 2016-2036*, April 2016; Florida Department of Transportation, *Florida Aviation System Plan 2013-2033*, April 2016.
PREPARED BY: McFarland Johnson, Inc., May 2016.

Exhibit 3-9: Historical and Forecast Based Aircraft



SOURCES: Federal Aviation Administration, *Terminal Area Forecast*, April 2016; Federal Aviation Administration, *FAA Aerospace Forecast Fiscal Years 2015-2035*, April 2016; Florida Department of Transportation, *Florida Aviation System Plan 2013-2033*, April 2016; McFarland Johnson, June 2016 (adjustment).

PREPARED BY: McFarland Johnson, Inc., June 2016.

Forecasts of Based Aircraft Using National Forecasts

The FAA publishes a forecast (FAA Aerospace Forecast) containing national trends and growth projections of active general aviation aircraft by type (piston, turbine, rotorcraft, experimental, sport aircraft, and other). This forecast contains guidance that suggests that most growth will occur in turbine, rotorcraft, and sport aircraft. According to the FAA Aerospace Forecast, based aircraft are anticipated to experience a 0.2 percent growth per year throughout the planning period. This results in growth of the current 58 based aircraft to 60 based aircraft in 2035.

Forecasts of Based Aircraft Using FAA TAF Growth Rate

The FAA TAF is the official FAA forecast for aviation activity at U.S. airports included within the National Plan for Integrated Airport Systems (NPIAS). The FAA TAF is updated every year with few exceptions of significant traffic shifts by major airlines or a significant data error. The TAF shows an average annual forecast growth of 2.15 percent for Key West International Airport based aircraft. However, the recent historical growth reported in the TAF appears to be in error, with a reported 2015 base year of 66 based aircraft. Adjusting the base year to the actual 58 based aircraft and applying the TAF growth rate results in based aircraft reaching 89 aircraft in 2035 from 58 in 2015.

Florida Aviation System Plan

The FDOT prepared a forecast of based aircraft and aircraft operations for all Florida airports. The FDOT shows an average annual forecast growth of 1.57 percent for based aircraft at the Airport. Applying this growth rate to the 2015 base year, results in based aircraft reaching 79 aircraft in 2035 from 58 in 2015.

3.5.2.4 Adjusted Based Aircraft Forecasts

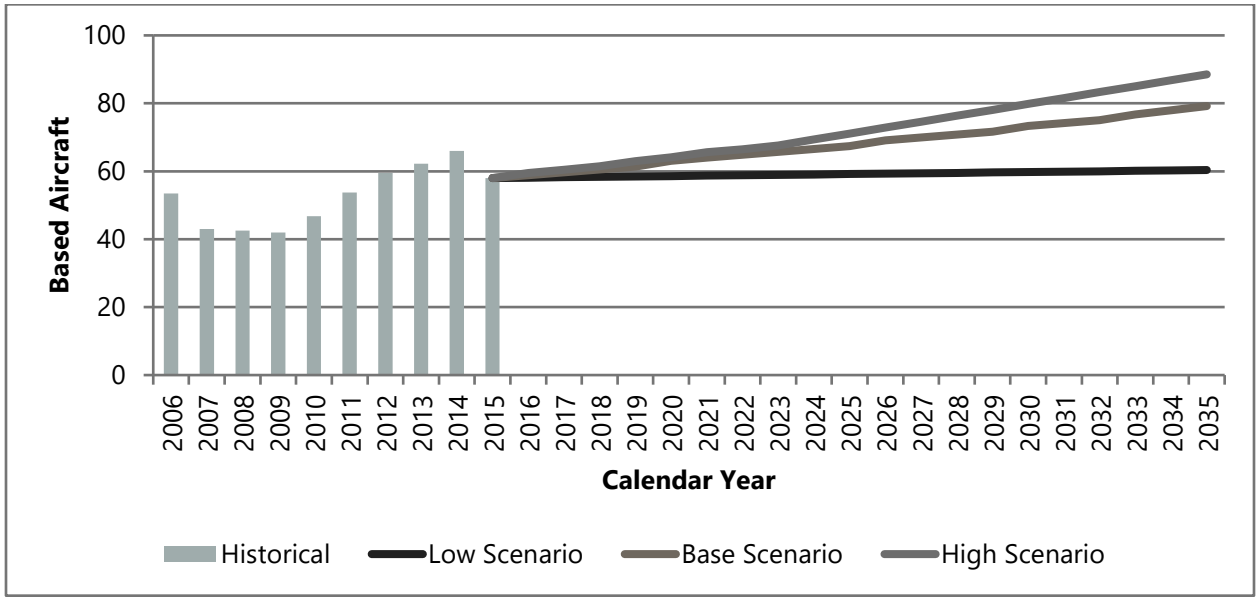
The three forecasts have been adjusted to start at the same base year 2015 based aircraft of 58. The low growth scenario is based on the FAA Aerospace forecast growth. The base scenario is based on the FDOT growth. The high growth scenario is based on the FAA TAF growth. The adjusted forecast based aircraft are shown in **Table 3-27** and **Exhibit 3-10**. If possible, plans should protect for the high growth scenario to allow the Airport maximum flexibility. Of the adjusted based aircraft forecasts presented, the base scenario appears to be the most likely forecast growth to be expected over the planning period given the historical trend and foreseeable local and regional market conditions.

Table 3-27: Adjusted Forecasts of Based Aircraft

YEAR	LOW-GROWTH SCENARIO	BASE SCENARIO	HIGH-GROWTH SCENARIO
Baseline			
2015	58	58	58
Forecasts			
2020	59	63	64
2025	59	67	71
2035	60	79	89
Average Annual Growth Rate	0.2%	1.57%	2.15%

SOURCE: McFarland Johnson, Inc., April 2016.
PREPARED BY: McFarland Johnson, Inc., May 2016.

Exhibit 3-10: Forecast Based Aircraft



SOURCES: Federal Aviation Administration, *Terminal Area Forecast*, April 2016; Federal Aviation Administration, *FAA Aerospace Forecast Fiscal Years 2015-2035*, April 2016; Florida Department of Transportation, *Florida Aviation System Plan 2013-2033*, April 2016; McFarland Johnson, June 2016 (adjustment).
PREPARED BY: McFarland Johnson, Inc., June 2016.

3.5.2.5 Forecast Based Aircraft Fleet Mix

Current Fleet Mix

The current fleet mix of based aircraft at EYW is shown in **Table 3-28**.

Table 3-28: Current Fleet Mix

AIRCRAFT TYPE	2015
Single-Engine	42
Multi-Engine	11
Jet	4
Helicopters	1
Total	**58**

SOURCE: Signature Flight, April 2016.
PREPARED BY: McFarland Johnson, Inc., May 2016.

Forecast Fleet Mix

It is anticipated that within the planning period, the based aircraft fleet mix will transition to a higher percentage of multi-engine and jet aircraft and that single-engine aircraft will realize a slower growth. This is also reflected in the FAA TAF. **Table 3-29** shows the projected based aircraft fleet mix utilizing the selected base scenario forecast.

Table 3-29: Forecast Based Aircraft Fleet Mix

AIRCRAFT TYPE	2020	2025	2035
Single-Engine	43	44	47
Multi-Engine	14	16	23
Jet	5	6	8
Helicopters	1	1	1
Total	**63**	**67**	**79**

SOURCE: McFarland Johnson, Inc., April 2016.
PREPARED BY: McFarland Johnson, Inc., May 2016.

3.5.2.6 Forecast Aircraft Operations

The aircraft operations forecast for the Airport is important for the assessment of infrastructure and facilities accessed by all airport users, including corporate aviation, flight training, and recreational aviation. Overall, annual operations and peak hour activity numbers are not only applied in the assessment of runway and taxiway infrastructure, but the forecast is also useful for more specific Airport requirements, such as fuel facilities, GA terminal space, and hangar availability considerations.

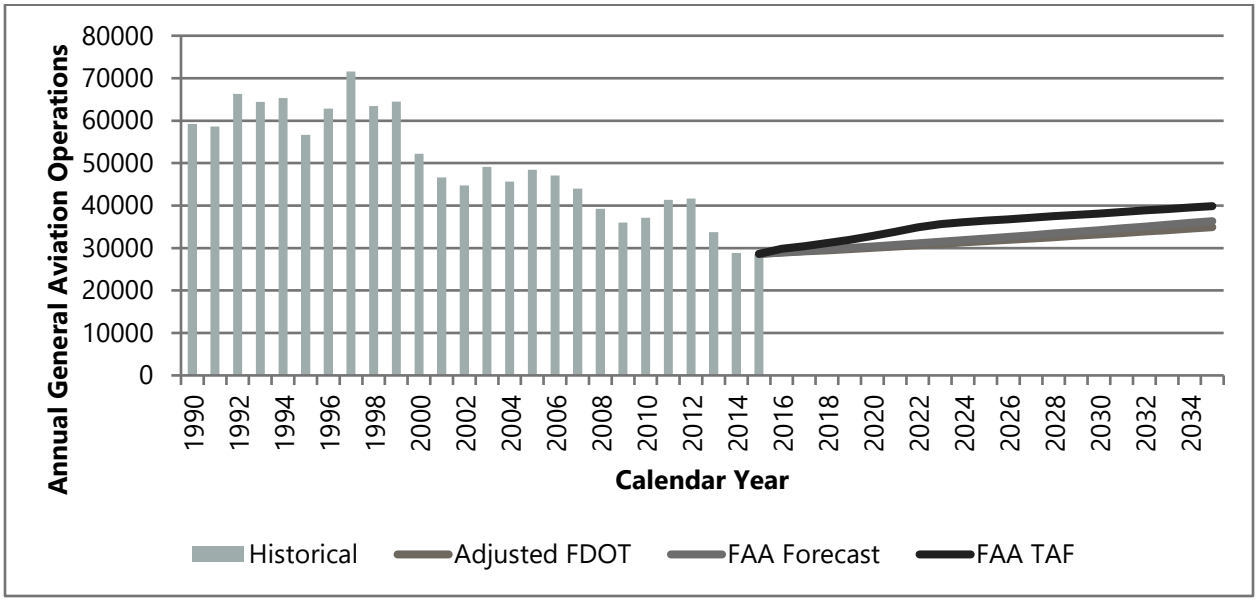
Historical annual aircraft operations at EYW are shown in **Table 3-30** and **Exhibit 3-11.** The growth elements discussed in the following sections present both the local and national factors that influence operational growth at EYW.

Table 3-30: Historical Itinerant and Local Aircraft Operations at Key West International Airport

YEAR	ITINERANT GA	LOCAL GA	TOTAL GA
1990	36,910	22,318	59,228
1991	34,763	23,875	58,638
1992	40,706	25,624	66,330
1993	43,418	21,028	64,446
1994	41,707	23,580	65,287
1995	39,603	17,012	56,615
1996	39,511	23,353	62,864
1997	45,713	25,812	71,543
1998	43,270	20,193	63,463
1999	43,867	20,653	64,520
2000	39,634	12,606	52,240
2001	35,712	10,948	46,660
2002	34,302	10,441	44,743
2003	36,999	12,125	49,124
2004	36,357	9,295	45,652
2005	33,772	14,684	48,456
2006	34,321	12,724	47,045
2007	30,964	13,024	43,988
2008	28,214	10,995	39,209
2009	28,084	7,939	36,023
2010	30,769	6,348	37,117
2011	33,946	7,420	41,366
2012	32,936	8,702	41,638
2013	27,340	6,435	33,775
2014	23,981	4,833	28,814
2015	24,851	3,761	28,612

SOURCE: Federal Aviation Administration, April 2016.
PREPARED BY: McFarland Johnson, Inc., May 2016.

Exhibit 3-11: Historical and Forecast General Aviation Aircraft Operations



SOURCES: Federal Aviation Administration, *Terminal Area Forecast*, April 2016; Federal Aviation Administration, *FAA Aerospace Forecast Fiscal Years 2015-2035*, April 2016; Florida Department of Transportation, *Florida Aviation System Plan 2013-2033*, April 2016; McFarland Johnson, June 2016 (forecast).

PREPARED BY: McFarland Johnson, Inc., June 2016.

Forecast Aircraft Operations Using National Forecasts

The FAA publishes a forecast (FAA Aerospace Forecast) containing national trends and growth projections of active general aviation aircraft hours flown. This forecast contains guidance that suggests that most growth will occur in turbine, rotorcraft, and sport aircraft. According to the FAA Aerospace Forecast, general aviation hours flown are anticipated to experience a 1.2 percent growth per year throughout the planning period. This results in a growth of the current approximately 28,600 general aviation operations to approximately 36,300 general aviation operations in 2035.

FAA Terminal Area Forecasts

The FAA TAF is the official FAA forecast for aviation activity at U.S. airports included within the National Plan for Integrated Airport Systems (NPIAS). The FAA TAF is updated every year with few exceptions of significant traffic shifts by major airlines or a significant data error. The TAF shows an average annual forecast growth of 1.68 percent for Key West International Airport aircraft operations. This results in general aviation operations reaching approximately 39,900 in 2035.

Florida Aviation System Plan (FASP)

The FDOT prepared a forecast of aircraft operations for all Florida airports. The FDOT FASP forecast shows an average annual forecast growth of one percent for Key West International Airport aircraft operations throughout the planning period. This results in aircraft operations reaching approximately 34,900 in 2035.

3.5.2.1 Selected Annual General Aviation Aircraft Operations Forecast

The three operations forecasts were adjusted for the actual 2015 base year operations and projected out over the planning period. The low growth scenario is based on the FDOT FASP forecast growth. The base scenario is based on the FAA Aerospace growth and the high growth scenario is based on the FAA TAF growth. The adjusted operations forecast are shown in **Table 3-31** and **Exhibit 3-12.** Airport plans should be considered to encourage realization of the high growth scenario and allow the Airport maximum flexibility. However, of the adjusted operations forecasts presented the base scenario appears to be the most likely forecast growth to be expected over the planning period given the historical trend.

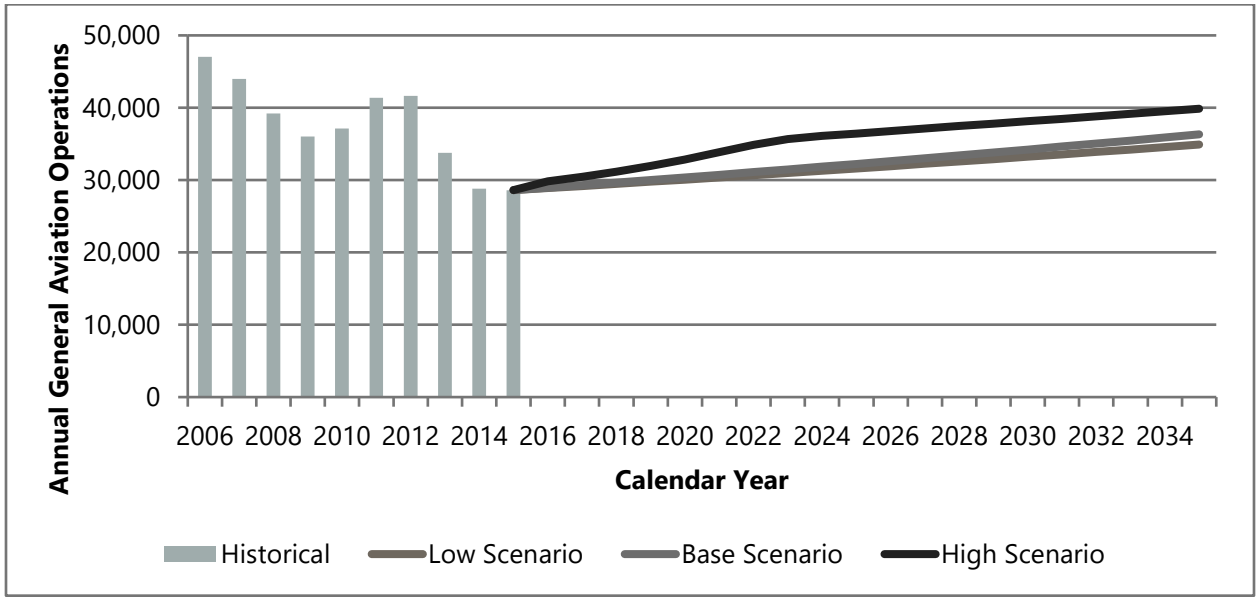
Table 3-31: Selected Forecasts of General Aviation Aircraft Operations

FISCAL YEAR	LOW-GROWTH SCENARIO (FDOT)	BASE SCENARIO (FAA AEROSPACE)	HIGH-GROWTH SCENARIO (TAF)
Baseline			
2015	28,612	28,612	28,612
Forecasts			
2020	30,071	30,370	32,856
2025	31,605	32,237	36,435
2035	34,912	36,321	39,861
Average Annual Growth Rate	1.0%	1.2%	1.7%

SOURCES: Federal Aviation Administration, *Terminal Area Forecast*, April 2016; Federal Aviation Administration, *FAA Aerospace Forecast Fiscal Years 2015-2035*, April 2016; Florida Department of Transportation, *Florida Aviation System Plan 2013-2033*, April 2016; McFarland Johnson, June 2016 (forecast).

PREPARED BY: McFarland Johnson, Inc., June 2016.

Exhibit 3-12: Forecast General Aviation Aircraft Operations



SOURCES: Federal Aviation Administration, *Terminal Area Forecast*, April 2016; Federal Aviation Administration, *FAA Aerospace Forecast Fiscal Years 2015-2035*, April 2016; Florida Department of Transportation, *Florida Aviation System Plan 2013-2033*, April 2016; McFarland Johnson, June 2016 (forecast).

PREPARED BY: McFarland Johnson, Inc., June 2016.

3.5.2.2 Types of Aircraft Operations

Local and Itinerant Operations

Based on the 2015 FAA TAF, itinerant general aviation aircraft make up approximately 85 percent of all general aviation operations. It is anticipated that this percentage will continue throughout the planning period. **Table 3-32** breaks down the historical general aviation operations into itinerant and local. **Table 3-33** shows the selected base scenario forecast of general aviation operations broken down into itinerant and local.

Table 3-32: Forecast of Local and Itinerant Operations at Key West International Airport

YEAR	ITINERANT	LOCAL
2016	24,612	4,343
2017	24,908	4,395
2018	25,206	4,448
2019	25,510	4,502
2020	25,814	4,556
2021	26,125	4,610
2022	26,438	4,666
2023	26,755	4,722
2024	27,077	4,778
2025	27,401	4,836
2026	27,730	4,894
2027	28,063	4,952
2028	28,399	5,012
2029	28,740	5,072
2030	29,085	5,133
2031	29,435	5,194
2032	29,787	5,257
2033	30,145	5,320
2034	30,506	5,384
2035	30,873	5,448

SOURCE: McFarland Johnson, Inc., April 2016.
PREPARED BY: McFarland Johnson, Inc., May 2016.

Operational Fleet Mix

Table 3-33 shows the operational breakdown of forecast general aviation operations by single-engine, multi-engine, jet, and helicopters. This breakdown was determined based on the type and number of based aircraft forecast at EYW. It is anticipated that single-engine operations will decrease as a percentage of total general aviation operations. Helicopter/rotorcraft operations will remain similar throughout the planning period. Multi-engine and jet operations as percentages of general aviation operations are anticipated to increase throughout the planning period. Overall, single-engine aircraft have experienced and continue to experience a decline in deliveries of aircraft and hours flown based on both the General Aviation Manufacturers Association (GAMA) 2016 General Aviation Databook & 2016 Industry Outlook and FAA Aerospace Forecast 2016-2036. Growth in multi-engine and jet operations is consistent with these forecasts and trends. Further,

Key West and the Florida Keys are a popular tourist destination with significant leisure travelers arriving by GA aircraft during the peak winter season and for special events. These travelers typically use more complex multi-engine and jet aircraft.

Table 3-33: Forecast General Aviation Operational Fleet Mix

	SINGLE-ENGINE		MULTI-ENGINE		JET		ROTORCRAFT	
YEAR	**NUMBER**	**%**	**NUMBER**	**%**	**NUMBER**	**%**	**NUMBER**	**%**
Base Year								
2015	20,720	72.4%	5,426	19.0%	1,973	6.9%	493	1.7%
Forecast - Base Scenario								
2020	20,729	68.3%	6,749	22.2%	2,410	7.9%	482	1.6%
2025	21,171	65.7%	7,698	23.9%	2,887	9.0%	481	1.5%
2035	21,609	59.5%	10,574	29.1%	3,678	10.1%	460	1.3%

SOURCE: McFarland Johnson, Inc., May 2016.
PREPARED BY: McFarland Johnson, Inc., May 2016.

General Aviation Peak Activity

The peaking characteristics for an airport are an important metric to note for capacity purposes. Specifically, the average day during the peak month's operations is of particular importance for evaluating the Airport's operational capacity, and identifying how much capacity is being utilized. This will be further reviewed in Facility Requirements of this Master Plan Update.

Peak Month: The peak month at an airport represents the busiest month during a calendar year. The peak month may not be the same each year. The peak month commonly accounts for 10 percent of total annual operations.

Average Day Peak Month (ADPM): The average day of the peak month is based on the peak month operations divided by the days in the month.

Peak Hour: The peak hour represents the busiest one hour period that occurs during the average day of the peak month. For many airports, this peak hour occurs during the morning or evening hours and represents between 10 and 12 percent of the total daily activities. The higher percentage (12 percent) is used at EYW for prudent planning purposes. This is largely due to the high tourist traffic volumes the Airport experiences during the peak winter season and other high traffic events.

Peaking characteristics for operations at EYW are shown in **Table 3-34**.

Table 3-34: Forecast Peak Activity

YEAR	TOTAL GENERAL AVIATION ANNUAL OPERATIONS	PEAK MONTH	AVERAGE DAY PEAK MONTH	PEAK HOUR (ADPM)
Base Scenario				
2020	30,370	3,037	100	12
2025	32,237	3,224	107	13
2035	36,321	3,632	121	15

NOTE:

ADPM – Average Day Peak Month

SOURCE: McFarland Johnson, Inc., May 2016.

PREPARED BY: McFarland Johnson, Inc., May 2016.

3.5.2.3 Summary of General Aviation Activity Forecasts

Table 3-35 presents a summary of the base scenario (selected) general aviation forecasts presented in this chapter.

Table 3-35: Summary of Activity Forecasts—Base Scenario

FORECAST	2015	2020	2025	2035
Based Aircraft				
Single-Engine	42	43	44	47
Multi-Engine	11	14	16	23
Jet	4	5	6	8
Rotorcraft	1	1	1	1
Total	58	63	67	79
General Aviation Operations				
Local	3,761	4,556	4,836	5,448
Itinerant	24,851	25,814	27,401	30,873
Total	28,612	30,370	32,237	36,321
Peak Activity				
Peak Month Operations	2,861	3,037	3,224	3,632
Average Day Operations	95	100	107	121
Peak Hour Operations	11	12	13	15

SOURCE: McFarland Johnson, Inc., May 2016.
PREPARED BY: McFarland Johnson, Inc., May 2016.

3.6 Other Air Taxi Operations Forecast

A number of techniques were examined to forecast other air taxi operations at the Airport. Other air taxi operations have been held at 20 percent of total air carrier and air taxi operations at the Airport, as experienced in the previous two years. This proportion was applied to the forecast passenger operations described in Section 2.3.3, resulting in a forecast CAGR of 1.6 percent for other air taxi operations from 2015 to 2035.

3.6.1.1 Military Operations Forecast

Forecast growth of military operations was obtained from the 2015 FAA TAF for the Airport; military operations for the forecast period are expected to remain constant.

3.6.2 OTHER AIRCRAFT OPERATIONS FORECASTS

Total historical and forecast aircraft operations at the Airport are presented in **Table 3-36**.

Table 3-36: Historical and Forecast Aircraft Operations

YEAR	PASSENGER AIRLINES	ALL-CARGO	GENERAL AVIATION	OTHER AIR TAXI	MILITARY	TOTAL OPERATIONS
Historical						
2006	25,715	866	47,045	2,825	10,598	87,049
2007	23,698	858	43,988	6,489	15,453	90,486
2008	21,043	818	39,209	4,819	5,154	71,043
2009	16,279	706	36,023	1,436	460	54,904
2010	18,087	711	37,117	857	481	57,253
2011	15,965	660	41,366	1,857	523	60,371
2012	19,566	672	41,638	622	394	62,892
2013	19,718	726	33,775	2,538	689	57,446
2014	18,267	743	28,814	5,099	662	53,585
2015	18,651	729	28,612	4,880	676	53,548
Forecast						
2016	19,902	754	28,955	5,370	676	55,657
2020	22,056	854	30,370	5,956	676	59,912
2025	22,832	984	32,237	6,191	676	62,920
2035	24,498	1,247	36,321	6,693	676	69,435
Compound Annual Growth Rate						
2006–2015	-3.5%	-1.9%	-5.4%	6.3%	-26.3%	-5.3%
2015–2020	3.4%	3.2%	1.2%	4.1%	0.0%	2.3%
2021–2025	0.6%	2.9%	1.2%	0.7%	0.0%	1.0%
2026–2035	0.7%	2.4%	1.2%	0.7%	0.0%	1.0%
2015–2035	1.4%	2.7%	1.2%	1.6%	0.0%	1.3%

SOURCES: Federal Aviation Administration, March 2016; U.S. Department of Transportation, Form T-100, March 2016; McFarland Johnson, Inc., May 2016 (GA Forecast); Ricondo & Associates, Inc., June 2016 (Forecast).

PREPARED BY: Ricondo & Associates, Inc., June 2016.

3.7 Summary of Total Operations Forecast

Operations across all aircraft categories are forecast to grow by 1.3 percent over the forecast period, through 2035. Growth is more heavily weighted in the shorter term, primarily due to passenger airline operations growth as airlines are expected to accommodate growing demand in that period through higher frequency of service. Later in the forecast period, passenger airline operations are expected to grow at a slower rate, mostly due to the use of larger aircraft.

3.7.1 COMPARISON TO OTHER FORECASTS

Table 3-37 presents a comparison of enplaned passengers forecast for the EYW Master Plan Study to enplaned passengers forecast by the FAA in the 2015 TAF and enplaned passengers forecast by the FDOT in the 2013-2033 FASP. **Exhibit 3-13** presents this information in graphic form. For the 2015 to 2035 period, the FAA has forecast annual enplaned passenger growth of 1.8 percent compared to the EYW forecast of 2.4 percent. From 2015 to 2033, the last year in the FASP, the FAA has forecast annual enplaned passenger growth of 1.9 percent, compared to the FASP forecast of 2.5 percent and the EYW Master Plan Study forecast of 2.5 percent. The Master Plan forecast remains within the variance tolerance levels specified by the FAA (within 10 percent over 5 years and within 15 percent over 10 years).[21]

[21] Forecast tolerances are defined in FAA Advisory Circular 150/5070-6B.

Table 3-37: Enplaned Passenger Forecast Comparison

YEAR	2016 MASTER PLAN	2015 FAA TAF[1/]	VARIANCE OF MASTER PLAN VS. 2015 TAF	2013 FDOT FASP[2/]	VARIANCE OF MASTER PLAN VS. 2013 FASP
Historical					
2006	285,804	283,588	0.8%	294,047	-2.8%
2007	271,632	265,955	2.1%	270,781	0.3%
2008	232,552	238,558	-2.5%	231,339	0.5%
2009	234,887	239,032	-1.7%	234,322	0.2%
2010	287,849	282,704	1.8%	287,359	0.2%
2011	335,700	336,916	-0.4%	335,603	0.0%
2012	370,959	369,190	0.5%	370,637	0.1%
2013	403,372	397,417	1.5%	402,842	0.1%
2014	384,663	394,860	-2.6%	412,913	-6.8%
2015	362,802	367,833	-1.4%	423,236	-14.3%
Forecast					
2016	391,035	390,394	0.2%	433,817	-9.9%
2020	433,318	420,792	3.0%	478,853	-9.5%
2025	485,707	458,814	5.9%	541,778	-10.3%
2035	580,474	527,591	10.0%	N/A	N/A
Compound Annual Growth Rate					
2006–2015	2.7%	2.9%		4.1%	
2015–2020	3.6%	2.7%		2.5%	
2021–2025	2.3%	1.7%		2.5%	
2026–2035	1.8%	1.4%		N/A	
2015–2031	2.5%	1.9%		2.5%	
2015–2035	2.4%	1.8%		N/A	

NOTES: Passenger totals do not include nonrevenue passengers.

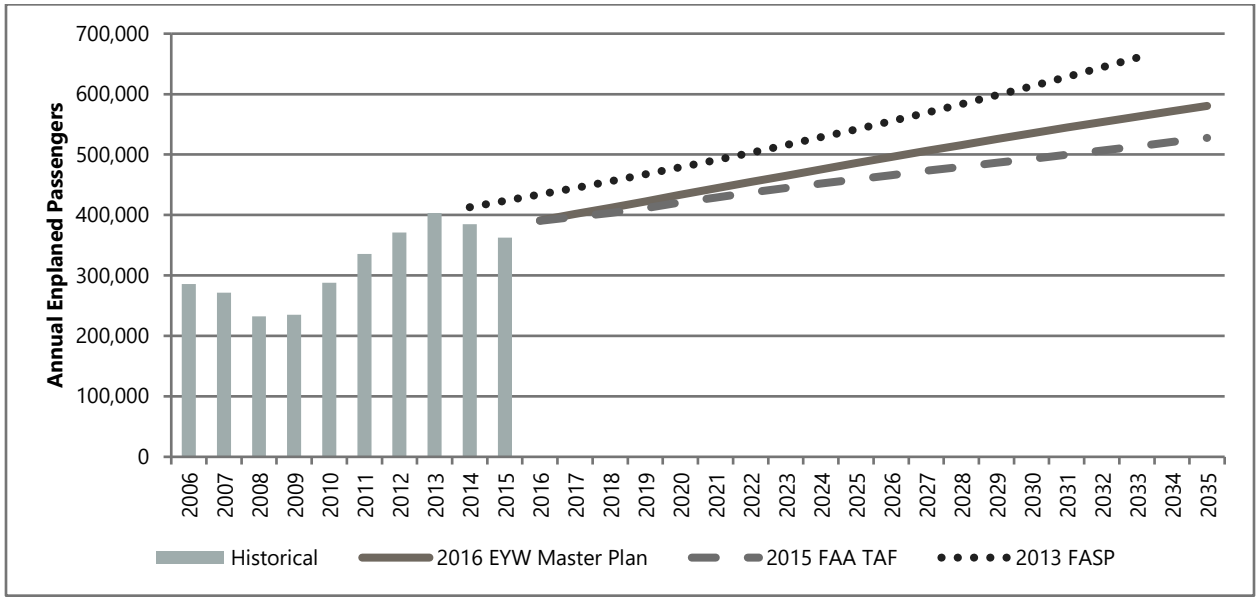
N/A – Not Applicable

1/ Adjusted to calendar year for comparison.

2/ Years 2014–2033 are forecast, with 2033 the latest forecast year.

SOURCES: U.S. Department of Transportation, T-100, March 2016; Federal Aviation Administration, *2015 Terminal Area Forecast*, March 2016; Florida Department of Transportation, *Florida Aviation System Plan 2013-2033,* March 2016; Ricondo & Associates, Inc., March 2016 (Forecast).
PREPARED BY: Ricondo & Associates, Inc., March 2016.

Exhibit 3-13: Enplaned Passenger Forecast Comparison



NOTE: FAA TAF has been adjusted to calendar year for comparison.

SOURCES: U.S. Department of Transportation, Form T-100, March 2016; Federal Aviation Administration, *2015 Terminal Area Forecast*, March 2016; Florida Department of Transportation, *Florida Aviation System Plan 2013-2033,* March 2016; Ricondo & Associates, Inc., March 2016 (Forecast).

PREPARED BY: Ricondo & Associates, Inc., March 2016.

Table 3-38 presents a comparison of total airport operations forecast in the EYW Master Plan Study to total airport operations forecast by the FAA in the 2015 TAF and total airport operations forecast by the FDOT in the 2013-2033 FASP. **Exhibit 3-14** presents this information in graphic form. For the 2015 to 2035 period, average annual growth in operations is forecast to be 1.7 percent in the 2015 TAF, compared to an average annual growth of 1.3 percent in the Master Plan forecast. From 2015 to 2033, the last year in the FASP, the FAA has forecast annual operations growth of 1.8 percent, compared to the FASP forecast of 1.1 percent and the EYW Master Plan Study forecast of 1.3 percent. As with enplaned passengers, the Master Plan forecast of total operations remains within the variance tolerance levels specified by the FAA, within 10 percent over 5 years and within 15 percent over 10 years.

While the EYW Master Plan Study enplaned passenger forecast is higher than that projected by the FAA TAF, the opposite is true of the operations forecast. The cause of this difference likely resides in average aircraft seat capacity assumptions for passenger airline operations, with the EYW Master Plan forecast assuming a larger average aircraft size than forecast in the FAA TAF.

Table 3-38: Operations Forecast Comparison

YEAR	2016 MASTER PLAN	2015 FAA TAF[1/]	VARIANCE OF MASTER PLAN VS. 2015 TAF	2013 FDOT FASP[2/]	VARIANCE OF MASTER PLAN VS. 2013 FASP
Historical					
2006	87,049	84,774	2.7%	94,408	8.5%
2007	90,486	86,670	4.4%	91,810	1.5%
2008	71,043	74,335	-4.4%	74,157	4.4%
2009	54,904	55,863	-1.7%	56,694	3.3%
2010	57,253	57,216	0.1%	60,434	5.6%
2011	60,371	60,259	0.2%	62,293	3.2%
2012	62,892	61,923	1.6%	62,758	-0.2%
2013	57,446	57,684	-0.4%	57,446	0.0%
2014	53,585	53,958	-0.7%	58,081	8.4%
2015	53,548	55,039	-2.7%	58,722	9.7%
Forecast					
2016	55,657	57,418	-3.1%	59,370	6.7%
2020	59,912	63,203	-5.2%	62,037	3.5%
2025	62,920	70,087	-10.2%	65,543	4.2%
2035	69,435	76,677	-9.4%	N/A	N/A
Compound Annual Growth Rate					
2006-2015	-5.3%	-4.7%		-5.1%	
2015-2020	2.3%	2.8%		1.1%	
2021-2025	1.0%	1.9%		1.1%	
2026-2035	1.0%	0.9%		N/A	
2015-2033	1.3%	1.8%		1.1%	
2015-2035	1.3%	1.7%		N/A	

NOTES:

N/A – Not Applicable

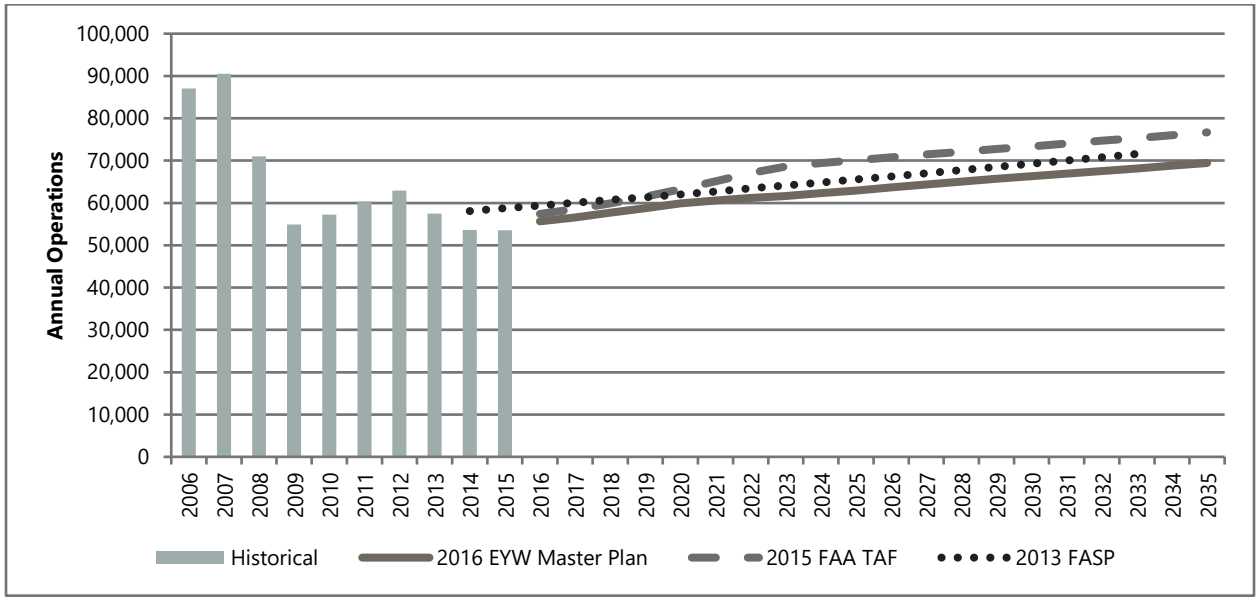
1/ Adjusted to calendar year for comparison.

2/ Years 2014–2033 are forecast, with 2033 the latest forecast year.

SOURCES: U.S. Department of Transportation, Form T-100, March 2016; Federal Aviation Administration, *2015 Terminal Area Forecast*, March 2016; Florida Department of Transportation, *Florida Aviation System Plan 2013-2033,* March 2016; McFarland Johnson, Inc., May 2016 (GA Forecast); Ricondo & Associates, Inc., June 2016 (Forecast).

PREPARED BY: Ricondo & Associates, Inc., June 2016.

Exhibit 3-14: Operations Forecast Comparison



NOTE: FAA TAF has been adjusted to calendar year for comparison.

SOURCES: U.S. Department of Transportation, Form T-100, March 2016; Federal Aviation Administration, *2015 Terminal Area Forecast*, March 2016; Florida Department of Transportation, *Florida Aviation System Plan 2013-2033,* March 2016; McFarland Johnson, Inc., May 2016 (GA Forecast); Ricondo & Associates, Inc., June 2016 (Forecast).

PREPARED BY: Ricondo & Associates, Inc., June 2016.

Chapter 4

Facility Requirements

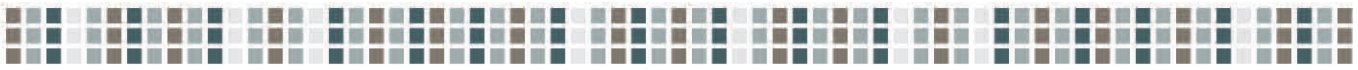


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4. Facility Requirements

The relationship between demand and capacity with regard to the many functional elements of an airport are complex. There are numerous issues that affect how efficiently a certain level of activity (demand) can be processed within a specific system or facility (capacity). Furthermore, the level of service or convenience that is acceptable varies by user, facility, and stakeholder.

The purpose of this section is to explore the relationship between demand and capacity in the context of the Airport's functional areas and to provide a general assessment of the ability of these areas to meet future demand levels. The initial step of developing facility requirements uses current traffic activity levels to analyze and establish base case requirements for the Airport upon which future demand requirements are derived through the forecast horizon. The current traffic activity levels (the base) uses a typical busy 2015 weekday in the airport's peak month to establish what is referred to as the Peak Month Average Day (PMAD). Three planning horizon years were analyzed in detail looking out 5, 10, and 20 years from the base, namely 2020, 2025, and 2035.

Subsequent sections will present and explain in detail the demand/capacity analysis undertaken for each of the following:

- Airfield
- Terminal
- On-Airport Curbsides, Roadways & Parking
- Air Cargo
- General aviation
- Support facilities

This introduction provides an overview of the upcoming sections of this chapter. Each section describes the key findings from the analysis, any potential limitations in the system based on today's facilities, and areas that may require improvements/expansion to accommodate anticipated passenger and aircraft traffic levels through the forecast horizon.

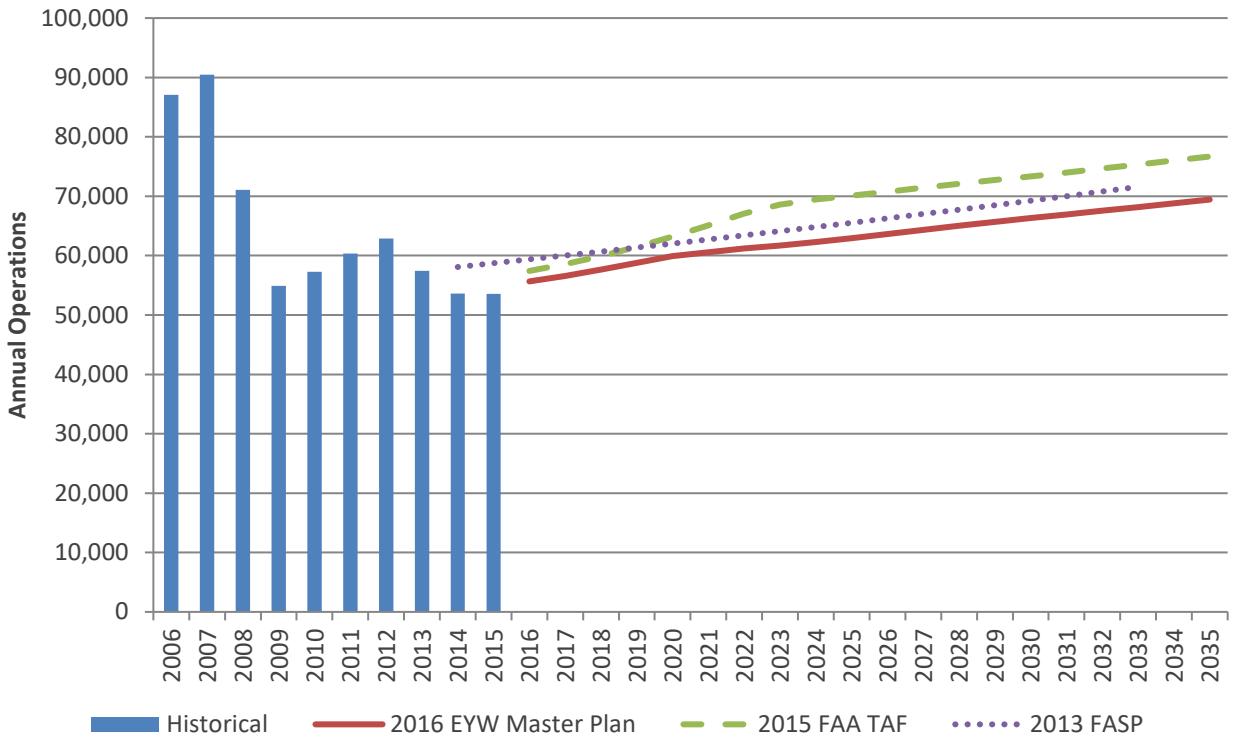
4.1 Airfield Facilities

This section serves to determine if any of the airside facilities will become inadequate to meet the various demand levels projected through 2035. This information will provide the basis of the next step in the planning process: the definition and evaluation of airside development alternatives, which is presented in Section 5.

4.1.1 AIRFIELD DEMAND/CAPACITY ANALYSIS

An airfield demand/capacity analysis was conducted to assess the capability of EYW's airfield facilities to accommodate existing and forecast aircraft operations through the planning horizon (2035), as depicted on **Exhibit 4.1-1**. Hourly runway capacity estimates were identified and compared to the peak hour design day flight schedule (DDFS) to determine if any airfield capacity enhancement measures may be required during the planning period (2015–2035). Details pertaining to the methodology and results of this analysis are documented in the following subsections.

Exhibit 4.1-1: Historical and Forecast Aircraft Operations



SOURCES: U.S. Department of Transportation, T-100, March 2016; Federal Aviation Administration, *2015 Terminal Area Forecast*, March 2016; Ricondo & Associates, Inc., March 2016 (Forecast).

PREPARED BY: Ricondo & Associates, Inc., September 2015.

Airfield capacity, also referred to as "throughput," is defined as the maximum number of aircraft operations that can be accommodated on an airfield during a specific period of time without incurring an unacceptable level of delay. Airfield capacity varies according to weather conditions, types of aircraft operating on the airfield, airfield configuration, and ATCT procedures. The number and location of runway exits and the share of touch-and-go operations also influence airfield capacity. Aircraft delay increases exponentially as the number of aircraft operations (i.e., demand) nears or exceeds the airfield capacity under a specific operating condition.

The following terms, as defined by the FAA, are used to describe the analysis:

- **Annual service volume (ASV).** As defined in Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay* (Change 2), ASV "is a reasonable estimate of an airport's annual capacity." In estimating ASV, the hourly, daily, and seasonal variations in aircraft demand associated with the airfield are considered, as well as the occurrence of low visibility and/or cloud ceiling heights, in which ATCT procedures are modified to maintain aircraft operational safety.
- **Average annual delay per operation.** This is an estimate of the average delay that each aircraft operation is expected to experience in a given year. Some aircraft operations, such as those occurring during peak operating hours, would likely experience higher delays, while other operations, such as nighttime operations, would likely experience little or no delay.

4.1.1.1 Factors Affecting Airfield Capacity

The capacity of an airfield, including the runways and associated exit taxiways, is not constant over time. A variety of factors can affect airfield capacity at an airport. These include:

- Airfield layout
- Percentage of time the airport experiences poor weather conditions (i.e., low cloud ceilings and/or low visibility)
- Aircraft fleet mix (types of aircraft operating at the airport)
- Frequency of touch-and-go operations
- Airfield operating configuration (runway use restrictions)
- Existing airfield demand/capacity and delay relationships
- Hourly airfield capacity

Airfield Layout

The number of runways, their orientation, the locations of runway intersections, and the lateral separation between parallel runways are primary factors affecting airfield capacity. The number of runway exits, their locations, and their type (high speed [oblique angle], 90 degree, etc.) also affect the capacity of the airfield.

Another factor affecting airfield capacity is the amount of time an aircraft occupies a runway. Runway occupancy time (ROT) for arriving aircraft is a function of the number, type, and location of runway exits, as well as aircraft performance. Typically, lighter aircraft require shorter runway distances for landing and, therefore, occupy the

runway for a shorter time. However, if a runway exit is not available once the aircraft has decelerated to a speed that allows for safe maneuvering off the runway, then airfield capacity is reduced.

Obliquely angled exit taxiways, when properly located along a runway, can more effectively reduce ROTs than 90-degree exit taxiways. Angled exit taxiways are aligned at an oblique angle relative to the runway centerline, typically between 30 and 45 degrees relative to the runway orientation. This angle allows arriving aircraft to exit more expeditiously than standard exit taxiways that are perpendicular to the runway, which results in lower ROT and increased airfield capacity.

Weather Conditions

Airfield capacity can vary significantly based on the weather conditions at an airport. Prevailing winds (direction and speed) dictate which runways can be used for aircraft arrivals and departures. Aircraft typically land and take off into the wind and can accommodate a limited amount of crosswind and tailwind. If the maximum crosswind or tailwind is exceeded, then the aircraft may not operate safely on that particular runway. Therefore, wind conditions may prevent the use of a higher-capacity runway operating configuration, thereby increasing aircraft delay.

Other meteorological conditions affecting airfield capacity include cloud ceiling height and visibility. Low cloud ceilings and poor visibility result in increased spacing between aircraft in the airspace surrounding the airport. These conditions may also restrict which runways can be used, as arrivals in these conditions require the use of instrument landing systems. Visual flight rules govern the procedures used to conduct aircraft operations in VMC. Similarly, instrument flight rules govern the procedures used to conduct aircraft operations in IMC. The criteria defining the two operating conditions are summarized in **Table 4.1-1**.

Aircraft operate in a similar manner at EYW during VMC and IMC.

Table 4.1-1: Operating Conditions for Airfield Capacity and Aircraft Delay Analysis

	WEATHER CONDITIONS		
CLASSIFICATION	**VISIBILITY**		**CLOUD CEILING**
VMC	Greater than or equal to 3 statute miles	and	Greater than or equal to 1,000 feet above ground level
IMC	Less than 3 statute miles	and/or	Less than 1,000 feet above ground level

NOTES:

VMC – Visual Meteorological Conditions

IMC – Instrument Meteorological Conditions

SOURCE: Federal Aviation Administration, Advisory Circular 150/5060-5, *Airport Capacity and Delay* (Change 2), December 1, 1995.
PREPARED BY: Ricondo & Associates, Inc., October 2015.

Aircraft Fleet Mix

The aircraft fleet mix operating at an airport is an important factor in determining airfield capacity. As the range of approach speeds and aircraft weights increases, airfield capacity decreases because of the increased in-trail separation required to avoid wake vortices or wake turbulence. Turbulence is created behind an aircraft as a result of its movement through the air. Heavier aircraft produce more severe wake vortices than lighter aircraft. Although more prevalent during departures than arrivals, wake vortices are considered a significant safety hazard during any airborne operation.

To reduce the hazards associated with wake vortices, aircraft are spaced according to the differences in their airspeed and weight. Light aircraft are more susceptible to the effects of wake vortices than heavy aircraft. Therefore, light aircraft are typically required to wait up to 2 minutes before operating on a runway after a heavy aircraft. This delay results in a loss in airfield capacity. The greater the size and weight differential of the aircraft fleet using a specific runway, the greater the increased separation required between successive aircraft operations on that runway.

AC 150/5060-5, *Airport Capacity and Delay* (Change 2), refers to the "mix index" that accounts for aircraft fleet composition. The mix index is represented as a percentage to quantify the share of large aircraft in the fleet mix. To establish the mix index, aircraft are assigned to one of five categories based on the maximum certificated takeoff weight of the aircraft. Based on the number of operations in each classification, a percentage is established to quantify the share of total aircraft operations at an airport by aircraft type that result in wake turbulence hazards. **Table 4.1-2** summarizes the five aircraft classifications in accordance with the maximum certificated takeoff weight of the aircraft in the fleet mix.

Table 4.1-2: Aircraft Classifications for Establishing Aircraft Mix Index

WAKE TURBULENCE CLASSIFICATION	AIRCRAFT CLASS	MAXIMUM CERTIFICATED TAKEOFF WEIGHT (POUNDS)	REPRESENTATIVE AIRCRAFT
Small	A (single engine) B (multi engine)	12,500 or less	Piper P23, Cessna C-180, Cessna C-207, King Air
Small +	C	12,501 to 41,000	Lear 25, Cessna Citation, Grumman G-1
Large	C	41,001 to 225,000	Gulfstream IV, F-28, Dash 8, Boeing 737, Boeing 727
B757	C	225,001 to 300,000	Boeing 757-200/300
Heavy	D	300,001 or more	Boeing 767, DC-10, A380, Boeing 747-8

SOURCE: Federal Aviation Administration, Advisory Circular 150/5060-5, *Airport Capacity and Delay* (Change 2), December 1, 1995.
PREPARED BY: Ricondo & Associates, Inc., July 2016.

Touch-and-Go Operations

Touch-and-go operations are defined as operations by a single aircraft that lands and departs without stopping or exiting the runway. Pilots conducting touch-and-go operations are usually conducting training exercises and, therefore, stay in the airport traffic pattern. Airfield capacity, in terms of the number of aircraft operations

possible, increases as the number of touch-and-go operations increases, since aircraft continually land and depart without incurring significant ROT. A touch-and-go operation is counted as two operations: one arrival and one departure. However, continuous touch-and-go operations reduce the availability of the runway for other non-training operations or may impede aircraft operations on nearby or intersecting runways. Although touch-and-go operations occur at EYW, it was assumed that there would be no touch-and-go operations during the peak hour.

Airfield Operating Configuration

As previously discussed, the layout of the airfield can result in a variety of operating configurations. Weather is a primary factor in dictating which operating configuration is used. However, other factors may influence operating configuration, including available runway departure and arrival lengths, the proximity of obstructions (structures and terrain), the proximity of other airports, and airspace constraints and interactions.

Aircraft performance characteristics may restrict aircraft operations on a runway. For departures, the available runway length must equal or exceed the runway length requirements specified for the departing aircraft. These requirements include the runway length needed for the takeoff ground roll, the runway length needed to clear an obstruction of a specified height (typically 35 feet above ground level), and the aircraft accelerate-stop distance. If the available runway length is not adequate to accommodate an aircraft, then that aircraft is required to depart from a runway that provides adequate departure length, or the aircraft payload must be reduced. Similarly, the landing distance available on the runway must exceed the landing distance requirements prescribed for the aircraft. Otherwise, the aircraft would be required to land on a longer runway.

Aircraft departures may also be restricted by the presence of obstacles. These restrictions are based on the climb performance of the aircraft and the location of the obstacle(s) relative to the departure route of the aircraft. Potential obstructions to aircraft takeoff and initial departure climb are of particular importance. Aircraft operations conducted under 14 CFR Part 121, *Operating Requirements: Domestic, Flag, and Supplemental Operations,* or 14 CFR Part 135, *Operating Requirements: Commuter and On-Demand Operations and Rules Governing Persons on Board Such Aircraft*, must adhere to an airport obstacle analysis prior to departure. If an obstacle prohibits the departing aircraft from meeting the minimum obstacle clearance requirements prescribed by the FAA, then the departure would not be permitted. The presence of this obstacle would restrict the use of the runway, thus affecting the airfield's operating configurations.

Runway use may also be predicated on regional ATCT procedures associated with nearby airports. The presence of neighboring airports often requires the shared use of navigational facilities or approach/departure fixes. In such cases, strict coordination between ATCT facilities is required, and the capacity of the overall regional airspace system could be restricted. In some instances, specific operating configurations at one airport may take precedence over operations at the other airport, which could restrict the use of certain operating configurations at the airport that has lower priority.

Existing Airfield Demand/Capacity and Delay Relationships

The estimated capacity of the existing airfield is presented in this section in terms of hourly capacity and ASV for each one of these planning horizons: 2015, 2020, 2025, and 2035 for the baseline scenario forecast.

For each runway use configuration, hourly capacities were established for operations during VMC and IMC. Historical weather and runway use data obtained from the FAA were used to determine how often each configuration is used. A weighted hourly capacity was then established based on the occurrence rate of each runway use configuration/weather condition and their respective hourly capacities. The weighted hourly capacity forms the basis for determining the airfield's ASV. ASV represents the estimated annual number of aircraft operations an airport can efficiently accommodate, with consideration of hourly, daily, and monthly operational patterns.[1]

AC 150/5060-5 presents the methodology for calculating hourly delay under a number of conditions that are representative of the seasonal and daily variations in demand, weather, runway use, and capacity. It is assumed that the variations in demand over the year can be characterized by a number of representative daily demands. The occurrences of different weather conditions and runway uses, and hourly runway capacity parameters corresponding to these occurrences, are provided as variables in the calculation. Hourly delays are established for each hour of the year using delay curves. The average delay per aircraft operation for the year is computed by aggregating the estimated hourly delays.

Hourly Airfield Capacity

When hourly demand begins to reach hourly capacity, aircraft delays grow at an increasing rate. These delays consist of extended arrival traffic patterns and departure queue delays in VMC, or they consist of holding patterns and flow control delays in IMC. As aircraft delays are most prevalent during peak demand periods, the hourly throughput of the airfield is compared with peak hour demand in the demand/capacity analysis. Peak hour demand that meets or exceeds hourly capacity is likely to result in delays during the peak demand period. The rate at which an airfield can "recover" from peak period delays is dependent on the operational demand profile throughout the day.

4.1.1.2 Methodology

Hourly runway capacity estimates were identified with the use of *runway*Simulator, which recently replaced the FAA's Airfield Capacity Model. Outputs of *runway*Simulator represent the most efficient airfield possible and, as such, the highest hourly capacities a specific airfield layout could yield; they are not necessarily representative of current airfield operations.

*runway*Simulator is a Monte Carlo simulation designed to estimate an hourly throughput capacity, not aircraft delay, of a runway system given a set of inputs that includes the following components:

- **Airfield Layout**: Runway geometry data (e.g., locations, dimensions, exits, fixes, etc.) imported from the FAA's AVNIS database or created manually.
- **Arrival and Departure Procedures**: Dependent upon the airfield layout but establishes a template for flight movements based on arrival and departure procedure assignments.

[1] The formula for calculating ASV consists of three variables: CW (weighted hourly capacity), D (the ratio of annual demand to average daily demand in the peak month), and H (the ratio of average daily demand to average peak hour demand during the peak month). These variables are multiplied together (CW*D*H) to obtain the ASV for the Airport

- **Aircraft Fleet Mix**: Fleet mix is the makeup of aircraft demand (derived from the forecast) to be generated for the capacity mode scenarios.
- **Procedure Eligibility**: Assigns specific aircraft types to individual runways via the defined arrival and departure procedures.
- **Separation Rules**: Dictates the timing of flights in the simulation, which is constrained by a variety of separation rules and regulations as defined by the FAA.[2]

To calculate the hourly throughput capacity, *runway*Simulator assumes a saturated-conditions schedule, represented by a continuous arrival and departure stream in proportion to the input aircraft fleet mix. The arrival and departure stream is characterized by there always being an aircraft waiting to land and takeoff (i.e., a continuous demand for service). These hourly estimates only account for the airspace constraints that impact the final approach spacing to the runways, dependent runway operations, and taxiways that serve as runway exits. The estimates do not account for any other airspace or ground constraints. *runway*Simulator does not provide any estimate of delay.

The resulting hourly capacity estimates were compared to the peak hour forecast to determine if the forecast demand exceeded the existing airfield capacity, which would then prompt a consideration of measures to increase the airfield capacity.

Airfield Operating Configurations and Procedures

In estimating the hourly capacity for the existing EYW airfield, two airfield operating configurations were considered—East Flow and West Flow—both in VMC and IMC, as presented in **Table 4.1-3**, along with corresponding occurrence percentages. Each of these configurations was simulated to determine the most efficient operating configuration.

Aircraft Fleet Mix Assumptions

The VMC and IMC aircraft fleet mixes were derived from the DDFS forecast. *runway*Simulator provides a finite number of aircraft types that generally align with the mix-index aircraft classifications contained within AC 150/5060-5, *Aircraft Capacity and Delay* (Change 2). To establish a fleet mix useable in the simulation, the DDFS aircraft types were mapped to the *runway*Simulator aircraft classifications, where applicable. **Table 4.1-4** presents the *runway*Simulator DDFS aircraft fleet mix mapping for the baseline forecast scenario.

[2] Federal Aviation Administration, JO 7110.65V, *Air Traffic Control*, February 2014.

Table 4.1-3: Airfield Operating Configurations

VISUAL METEOROLOGICAL CONDITIONS		INSTRUMENT METEOROLOGICAL CONDITIONS	
FLOW	**OCCURRENCE**	**FLOW**	**OCCURRENCE**
East: A 9, D 9	85.4%	East: A 9, D 9	0.9%
West: A 27, D 27	13.5%	West: A 27, D 27	0.2%%
	98.9%		1.1%

NOTES:

A – Arrival

D – Departure

SOURCES: National Centers for Environmental Information (NCEI), EYW Airport 3505 Surface Hourly Weather Observations (January 1, 2006 – December 31, 2015; 87,463 total observations), retrieved June 2016; Ricondo & Associates, Inc., July 2016.

PREPARED BY: Ricondo & Associates, Inc., July 2016.

Table 4.1-4: *runway*Simulator Aircraft Fleet Mix Mapping

RUNWAY SIMULATOR AIRCRAFT CLASSIFICATION	DDFS AIRCRAFT TYPES
Airbus 380 (A388)	N/A
Boeing 777 (B772)	Boeing 777, Airbus A350, Boeing 787
Boeing 767 (B763)	Boeing 767, MD-11, DC-10
Boeing 757 (B752)	Boeing 757
Boeing 737 (B737)	MD 80, Airbus 319, Airbus A321, Airbus A320, Boeing 73, Boeing 717
Dash 8-400 (DH8D)	N/A
CRJ-200 (CRJ2)	CRJ-700, CRJ-900, ERJ 140, ERJ 145, ERJ 175, ERJ-190
Dash 8-100 (DH8A)	Bombardier Q400
Embraer 120 (E120)	N/A
Cessna Citation V (C560)	Lear Jet 60, Hawker 800, Gulfstream IV, Gulfstream V, Global Express
Cessna Citation (C510)	N/A
Piper Navajo PA-31 (PA31)	Cessna 310
King Air C90 (BE9L)	Socata TBM-850
Piper Cherokee PA-28 (P28A)	Piper Cherokee, Beach Bonanza, Beech Baron
Cessna 208 (C208)	Cessna 172, Cessna 208, Diamond DV-20, Diamond DV-40, Cirrus SR20

NOTE:

N/A – Not Applicable

SOURCES: MITRE, *runway*Simulator, v0.0.1, November 2015; Ricondo & Associates, Inc., *EYW Master Plan Design Day Flight Schedule*, July 2016.

PREPARED BY: Ricondo & Associates, Inc., July 2016.

Utilizing the mappings presented in Table 4.1-4, VMC and IMC peak hour fleet mixes were developed for the following operational configurations for the baseline forecast scenarios, as shown in **Table 4.1-5**.

Table 4.1-5: Peak Hour by Type of Operation (Baseline Forecast)

OPERATION TYPE	2015 PEAK HOUR	2035 PEAK HOUR
ALL	11:50 a.m. to 12:50 p.m.	10:00 a.m. to 11:00 a.m.
ARRIVAL	7:30 a.m. to 8:30 a.m.	8:30 a.m. to 9:30 a.m.
DEPARTURE	12:10 p.m. to 1:10 p.m.	10:00 a.m. to 11:00 a.m.

SOURCE: Ricondo & Associates, Inc., *EYW Master Plan Design Day Flight Schedule*, July 2016.
PREPARED BY: Ricondo & Associates, Inc., July 2016.

Hourly Capacity Estimates

The peak hour total operations, arrivals, and departures fleet mixes were modeled for the 2015, 2020, 2025, and 2035 fleet mixes in *runway*Simulator, based on the airfield operating configurations previously identified in Table 4.1-3. The results of that analysis are presented in **Table 4.1-6**.

It should be noted that, for purposes of evaluating airfield capacity, the demand/capacity assessment focused on the hourly capacity estimates for the condition representative of 50 percent arrivals and 50 percent departures.

Table 4.1-6: Estimated Hourly Capacities of the Existing Airfield Configuration (Baseline Scenario)

	VISUAL METEOROLOGICAL CONDITIONS		INSTRUMENT METEOROLOGICAL CONDITIONS	
EXISTING AIRFIELD LAYOUT	**MIX INDEX**	**HOURLY CAPACITY (50% ARRIVALS)**	**MIX INDEX [1/]**	**HOURLY CAPACITY (50% ARRIVALS)**
EXISTING (2015)				
East Flow	43.0%	63	43.0%	46
West Flow	43.0%	62	43.0%	46
2020				
East Flow	45.0%	66	45.0%	46
West Flow	45.0%	66	45.0%	46
2025				
East Flow	46.0%	65	46.0%	46
West Flow	46.0%	65	46.0%	46
2035				
East Flow	46.0%	66	46.0%	46
West Flow	46.0%	67	46.0%	47

NOTE:

Mix Index – (Percent of Large Aircraft) + (3 * Percent of Heavy Aircraft)

SOURCES: Federal Aviation Administration, Advisory Circular 150/5060-5, *Airport Capacity and Delay* (Change 2), December 1, 1995; Ricondo & Associates, Inc., July 2016.
PREPARED BY: Ricondo & Associates, Inc., July 2016.

As shown in Table 4.1-6, the 2035 forecast hourly capacity is slightly higher than that for the 2015 existing airfield in VMC, with a high of 67 operations in west flow (baseline scenario). The difference in hourly capacity is generally related to a higher number of large aircraft in 2035, resulting from an increase in passenger service

by regional jets and medium narrowbody aircraft. As expected, the hourly capacity estimates under IMC are lower than the estimates under VMC as a result of increased separation requirements between successive aircraft operations.

The slight increase in the VMC and IMC mix index from 43.0 percent in 2015 to 46.0 percent in 2035 is considered negligible, and it would have a minimal impact on the airfield's hourly capacity. This increase is attributed to a small increase in the share of regional jet aircraft and medium narrowbody aircraft.

4.1.1.3 Hourly Demand/Capacity Comparisons

Exhibit 4.1-2 presents the hourly capacity estimates associated with each airfield operating configuration and peak hour demand at the Airport in 2015 (existing) for the baseline forecast. **Exhibit 4.1-3** through **Exhibit 4.1-5** present comparisons of the hourly capacity estimates associated with each airfield operating configuration and peak hour demand at the Airport forecast for 2020, 2025, and 2035 (for the baseline forecast).

Each exhibit presents a separate comparison for VMC and IMC weather conditions, assuming an arrivals mix of 50 percent.

As shown, the VMC and IMC peak hour aircraft operations are not anticipated to exceed the hourly airfield capacity under any of the runway operating configurations throughout the planning horizon.

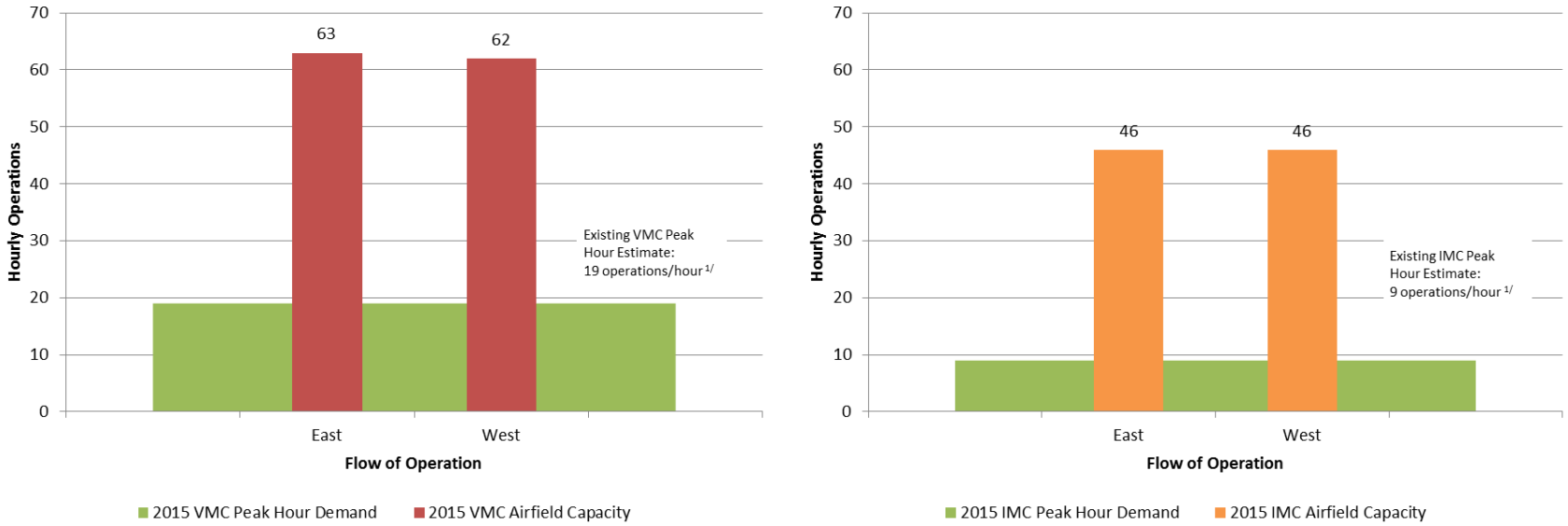
Annual Service Volume

The peak hour airfield capacity estimates for the Airport serve as the basis for establishing the ASV of the existing airfield. The ASVs are then compared with the annual aircraft operational demand forecast for 2020, 2025, and 2035. As annual demand exceeds the ASV of the airfield, aircraft delay increases exponentially. To minimize aircraft delay, the FAA recommends that planning for additional airfield capacity begin when the airfield's annual demand reaches 60–75 percent of its ASV.[3] Identification of the demand level at which this would occur requires quantification of annual demand expressed as a share (percent) of the ASV. **Table 4.1-7** presents this comparison for the operational demand experienced during 2015 and what has been forecast for 2020, 2025, and 2035. The table also presents annual demand expressed as a percentage of the ASV, as well as the estimated peak hour demand.

As shown, the ASV at the Airport during 2015 (baseline forecast) was estimated at 173,000 operations, while actual annual demand numbered approximately 54,000 operations. As a result, the annual demand during 2015 represented approximately 31 percent of the ASV. Since this percentage does not exceed 60 percent, planning for additional airfield capacity at EYW is not yet necessary. Annual demand is not anticipated to exceed the ASV throughout the planning horizon under the baseline forecast. The relationship between annual service volume and annual demand is graphically depicted on **Exhibit 4.1-6** for the baseline forecast scenario.

[3] Federal Aviation Administration, Order 5090.3C, *Field Formulation of the National Plan of Airport Integrated Systems (NPIAS)*, December 4, 2000.

Exhibit 4.1-2: 2015 Hourly Airfield Demand/Capacity Comparison—Existing Airfield (Baseline Forecast)



NOTES:

1/ Assumes 50 percent arrivals.

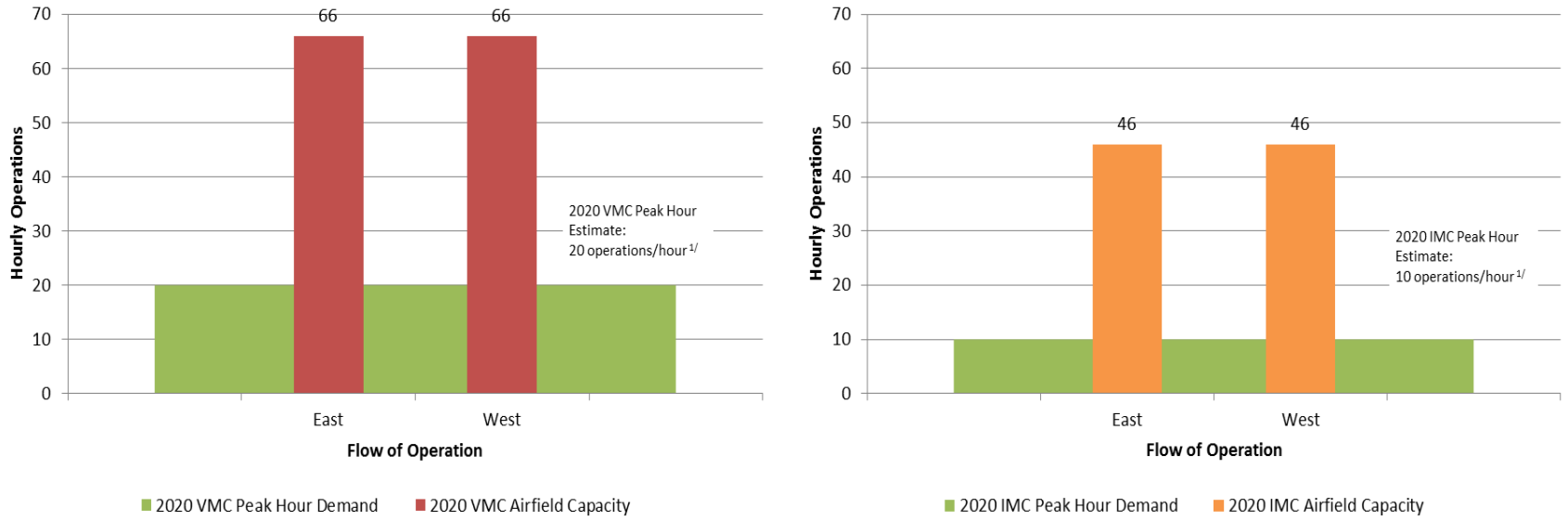
VMC – Visual Meteorological Conditions

IMC – Instrument Meteorological Conditions

SOURCES: Ricondo & Associates, Inc., *EYW Master Plan Design Day Flight Schedules*, July 2016; Federal Aviation Administration, Advisory Circular 150/5060-5, *Airport Capacity and Delay* (Change 2), December 1, 1995; Ricondo & Associates, Inc., July 2016.

PREPARED BY: Ricondo & Associates, Inc., July 2016.

Exhibit 4.1-3: 2020 Hourly Airfield Demand/Capacity Comparison—Existing Airfield (Baseline Forecast)



NOTES:

1/ Assumes 50 percent arrivals.

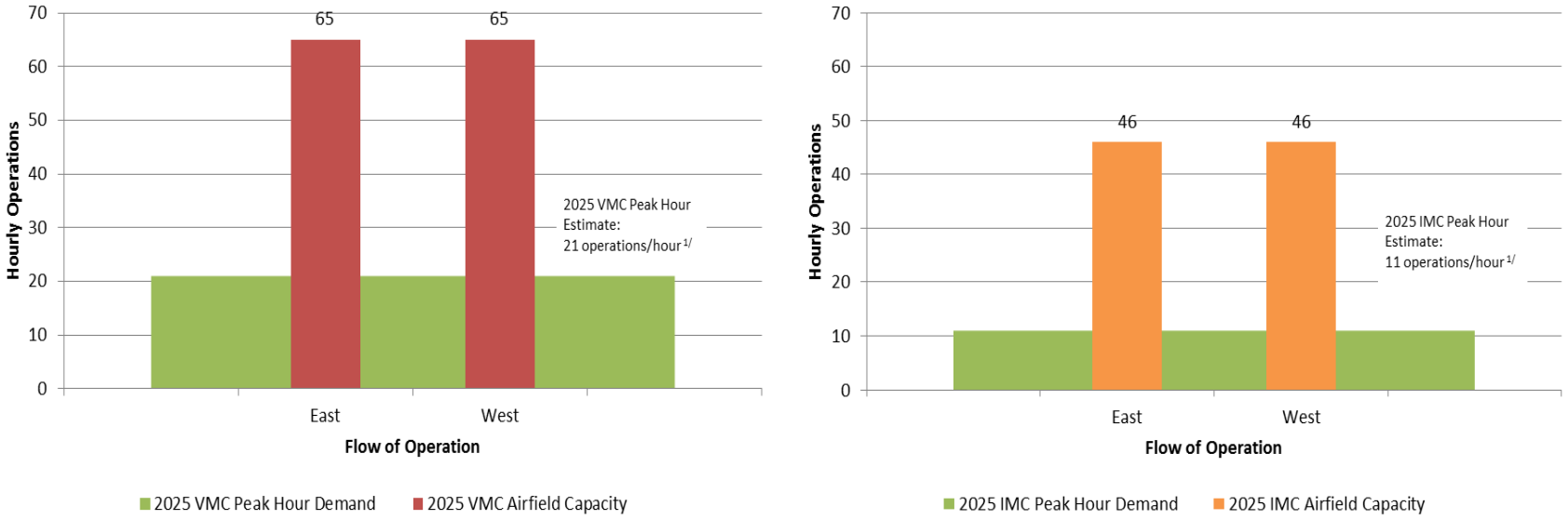
VMC – Visual Meteorological Conditions

IMC – Instrument Meteorological Conditions

SOURCES: Ricondo & Associates, Inc., *EYW Master Plan Design Day Flight Schedules*, July 2016; Federal Aviation Administration, Advisory Circular 150/5060-5, *Airport Capacity and Delay* (Change 2), December 1, 1995; Ricondo & Associates, Inc., July 2016.

PREPARED BY: Ricondo & Associates, Inc., July 2016.

Exhibit 4.1-4: 2025 Hourly Airfield Demand/Capacity Comparison—Existing Airfield (Baseline Forecast)



NOTES:

1/ Assumes 50 percent arrivals.

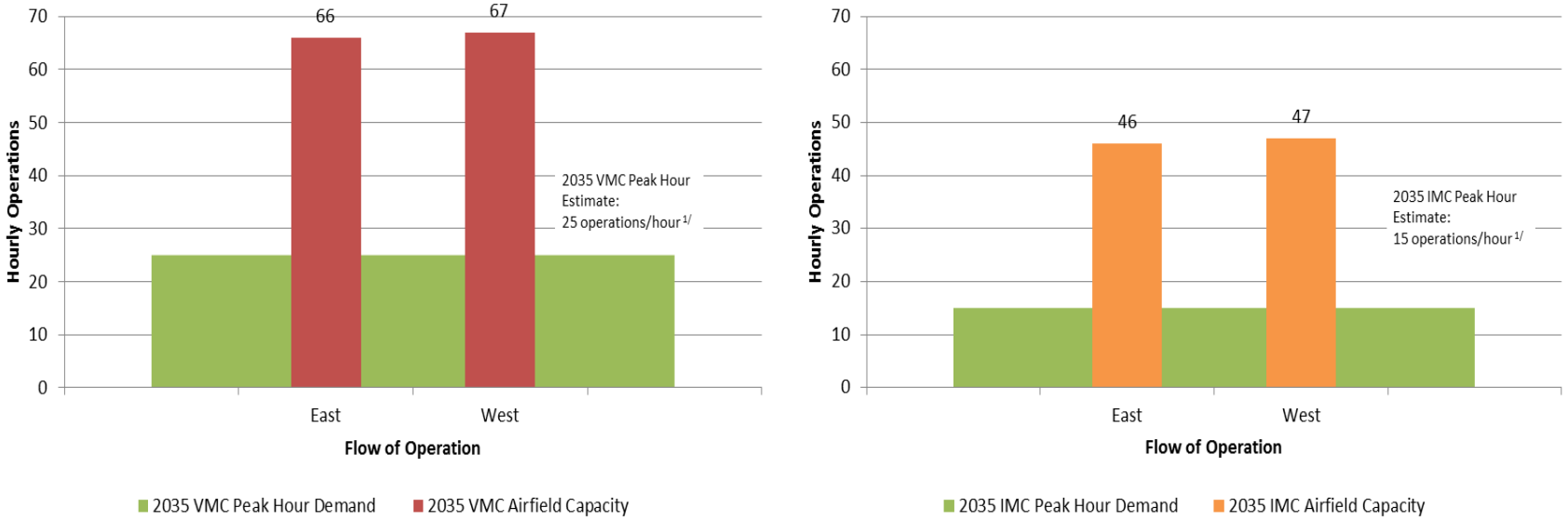
VMC – Visual Meteorological Conditions

IMC – Instrument Meteorological Conditions

SOURCES: Ricondo & Associates, Inc., *EYW Master Plan Design Day Flight Schedules*, July 2016; Federal Aviation Administration, Advisory Circular 150/5060-5, *Airport Capacity and Delay* (Change 2), December 1, 1995; Ricondo & Associates, Inc., July 2016.

PREPARED BY: Ricondo & Associates, Inc., July 2016.

Exhibit 4.1-5: 2035 Hourly Airfield Demand/Capacity Comparison—Existing Airfield (Baseline Forecast)



NOTES:

1/ Assumes 50 percent arrivals.

VMC – Visual Meteorological Conditions

IMC – Instrument Meteorological Conditions

SOURCES: Ricondo & Associates, Inc., *EYW Master Plan Design Day Flight Schedules*, July 2016; Federal Aviation Administration, Advisory Circular 150/5060-5, *Airport Capacity and Delay* (Change 2), December 1, 1995; Ricondo & Associates, Inc., July 2016.

PREPARED BY: Ricondo & Associates, Inc., July 2016.

Table 4.1-7: Comparison of Annual Demand and Annual Service Volume

CAPACITY/DEMAND METRIC	EXISTING 2015	2020	2025	2035
Estimated Peak Hour Demand:				
VMC	19	20	21	25
IMC	9	10	11	15
Annual Service Volume	173,000	193,000	190,000	179,000
Annual Demand:				
Aircraft Operations	54,000	60,000	63,000	69,000
Percent of Annual Service Volume	31%	31%	33%	39%

NOTES:

VMC – Visual Meteorological Conditions

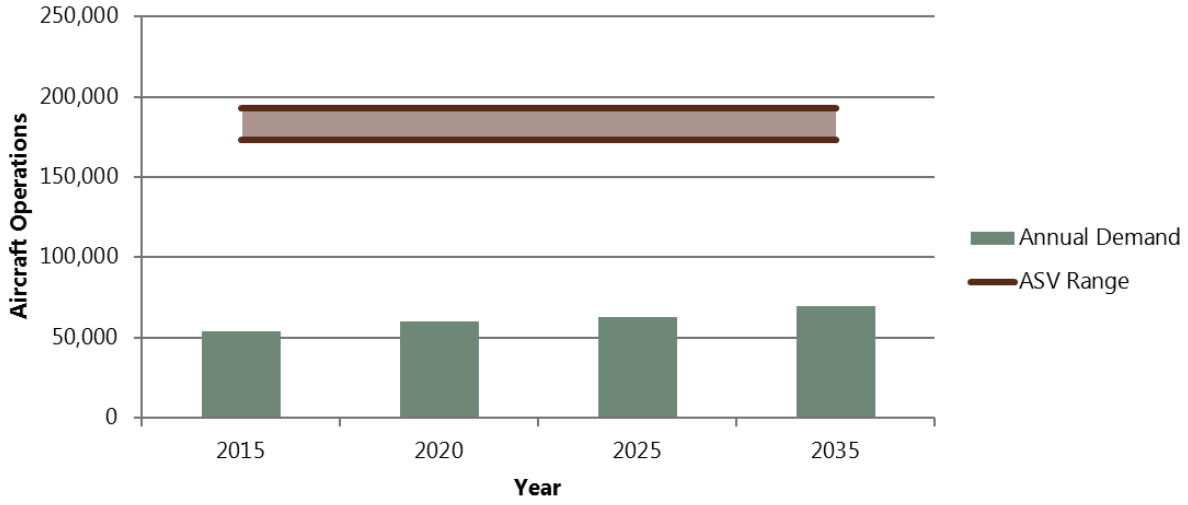
IMC – Instrument Meteorological Conditions

1/ Annual service volume and aircraft operations rounded to nearest thousand.

SOURCES: Federal Aviation Administration, Advisory Circular 150/5060-5, *Airport Capacity and Delay* (Change 2), December 1, 1995; Ricondo & Associates, Inc., July 2016.

PREPARED BY: Ricondo & Associates, Inc., July 2016.

Exhibit 4.1-6: Annual Service Volume vs. Annual Demand Relationship (Baseline Forecast)



NOTE:

1/ ASV – Annual Service Volume

SOURCES: Federal Aviation Administration, Advisory Circular 150/5060-5, *Airport Capacity and Delay* (Change 2), December 1, 1995; Ricondo & Associates, Inc., August 2016.

PREPARED BY: Ricondo & Associates, Inc., August 2016.

As depicted on Exhibit 4.1-6, the ASV remains higher than the annual demand throughout the planning horizon.

Airfield Delay

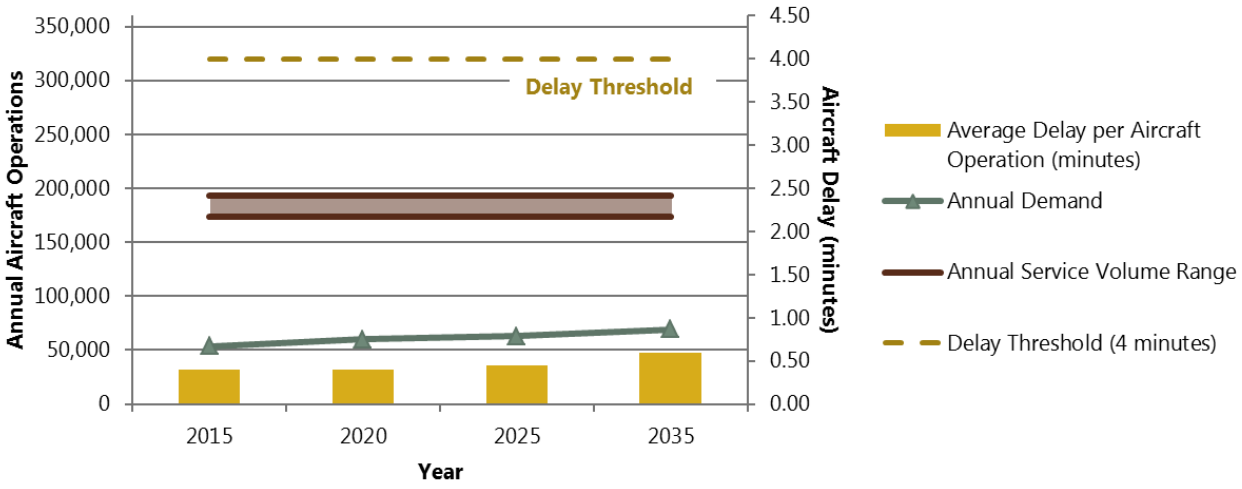
For long-term planning, AC 150/5060-5, *Airport Capacity and Delay* (Change 2), recommends using a general demand versus capacity comparison to estimate the average delay associated with the airfield. For purposes of this analysis, the ratio of annual demand to the airfield ASV serves as the basis for developing delay estimates.

The aircraft delay estimates provide the basis for justifying capacity improvements, as they demonstrate the true operational consequences associated with exceeding the airfield's ASV.

It should be noted that the delay estimates contained in AC 150/5060-5 reflect delays associated with runways only. Additional delays associated with local airspace constraints, aircraft taxiing operations, and gate occupancies are not included. These other components of delay cannot be reasonably quantified without the use of advanced airfield and airspace simulation tools. As the delay estimates presented herein reflect delay associated exclusively with the runway components, the recommended maximum allowable delay per operation is between 4.0 and 6.0 minutes.[4] On that basis, airfield capacity enhancements should be implemented prior to reaching or exceeding this delay threshold.

Exhibit 4.1-7 graphically presents the relationship among demand, capacity, and delay through 2035 under the baseline forecast. The exhibit presents a comparison of the forecast increase in annual demand with the ASV of the existing airfield through 2035, superimposed on the resulting average delay per aircraft operation. As shown, the average aircraft delay (runway component only) currently experienced at EYW is approximately 0.4 minutes, and it is anticipated to be 0.6 minutes in 2035; both delays are well below the typical threshold of unacceptable delay in the airline industry.

Exhibit 4.1-7: Relationship of Demand, Capacity, and Delay (Baseline Forecast)



NOTE:

1/ Minutes of delay reflects runway component only.

SOURCES: Federal Aviation Administration, Advisory Circular 150/5060-5, *Airport Capacity and Delay* (Change 2), December 1, 1995; Ricondo & Associates, Inc., August 2016.

PREPARED BY: Ricondo & Associates, Inc., August 2016.

[4] Federal Aviation Administration, AC 150/5070-6B, *Airport Master Plans*, May 2007.

Existing Airfield Demand/Capacity Conclusions

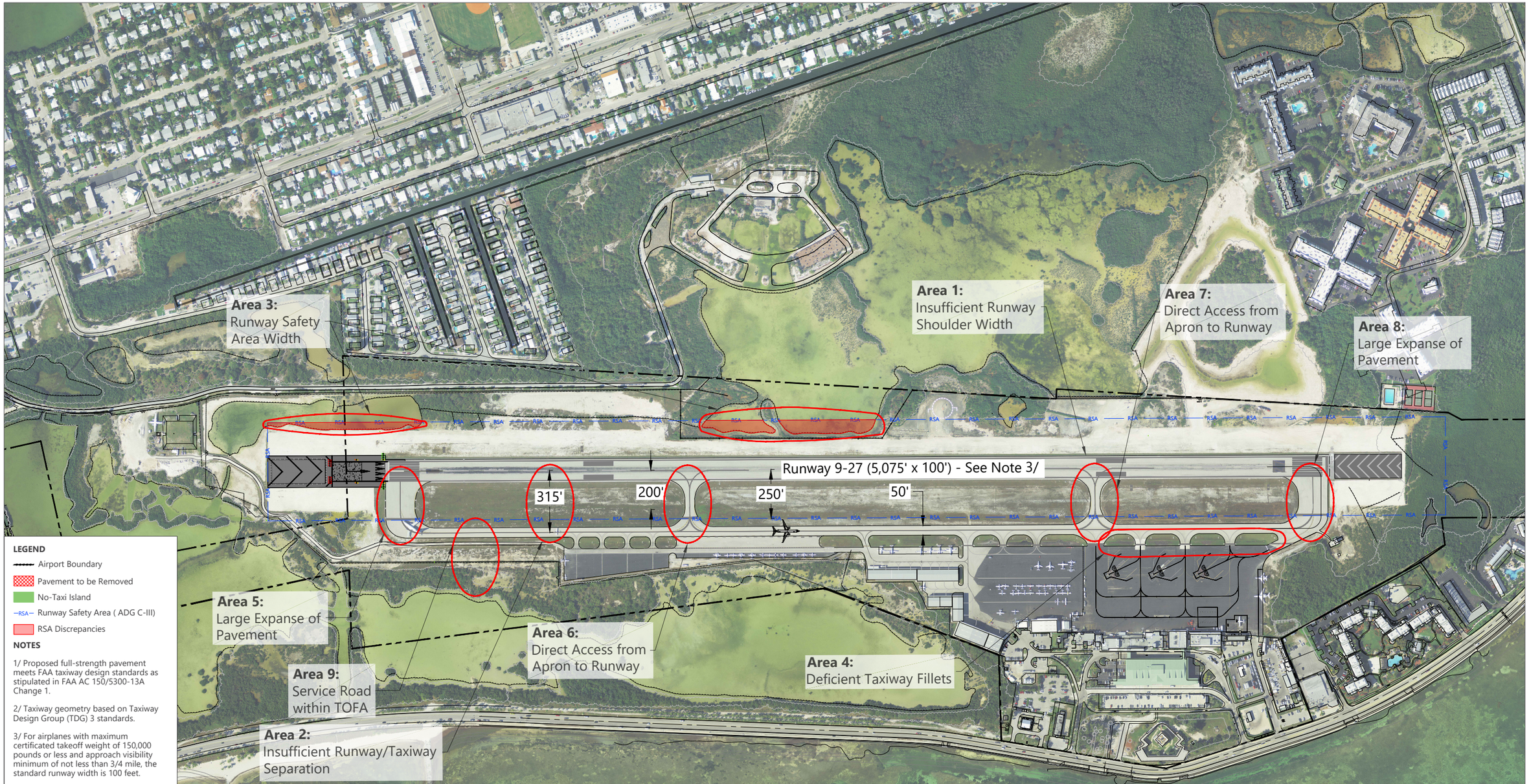
The airfield demand/capacity analysis determined that the existing runway layout is adequate to accommodate existing (2015) and future (2035) operational demand at the Airport under the baseline forecast scenario. Based on the average delay per aircraft operation, there is no need for additional airfield capacity throughout the planning horizon.

4.1.2 AIRFIELD GEOMETRY

The airfield consists of the runway, taxiways, taxilanes, and apron areas. These facilities support the maneuvering of aircraft at the Airport. This section provides an assessment of airfield improvements identified for EYW. Specifically, the following sections will discuss runway, taxiway, and other airfield facility requirements necessary to support the various types and level of aircraft operations expected over the course of the planning horizon. An assessment of airfield geometry principles and dimension standards was conducted, based on guidance set forth in FAA AC 150/5300-13A, *Airport Design*, for Airplane Design Group (ADG) III and Taxiway Design Group (TDG) 3 aircraft. A total of eight areas of noncompliance were identified and are highlighted on **Exhibit 4.1-8**. The following is a list of the eight areas of noncompliance:

- Area 1 - runway shoulders' width (increase from 10 feet to 20 feet)
- Area 2 - runway-to-taxiway separation (currently 315 feet instead of 400 feet)
- Area 3 - runway safety area width (less than 500 feet)
- Area 4 - Taxiway A: widen connectors into apron to allow cockpit over centerline taxiing
- Area 5 - Taxiway B: wide expanse of pavement
- Area 6 - Taxiway C: direct access from apron to runway
- Area 7 - Taxiway D: direct access from apron to runway
- Area 8 - Taxiway E: wide expanse of pavement

Resolution of these areas of noncompliance will be addressed in the Alternatives Development section.



SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., January 2017.

EXHIBIT 4.1-8

NORTH 0 500 ft

Airfield Geometry Areas of Noncompliance

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\205- Facility Requirements\Airfield Geometry\CAD\Exhibit 4.1-8_Airfield Geometry Areas of Non-Compliance.dwgLayout: 11x17L Plotted: Jun 11, 2020, 04:33PM

4.1.2.1 Critical Aircraft and Airport Reference Code

The Airport Reference Code (ARC) is a coding system outlined in FAA AC 150/5300-13A, *Airport Design* (Change 1), as the basis for specifying applicable airport design standards. The intent of the ARC is to provide a simple method for compiling the numerous dimensional and performance specifications of the aircraft that operate at an airport into criteria that will define the dimensional and design standards of airport facilities. The ARC is based on an aircraft's wingspan or tail height and approach speed. It relates the operational and physical characteristics of the most demanding aircraft expected to operate at, or make substantial use of, the airport, to airport design criteria. The airport design criteria include the size of runway safety areas, runway and taxiway/taxilane length and width, and separation distances. The most demanding aircraft is often referred to as the critical aircraft. As stated in FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, the critical design aircraft must have at least 500 or more annual itinerant (does not include local operations) or scheduled commercial service operations at the airport.

Once the critical aircraft characteristics have been identified, they are used to determine the ARC, which is identified using an alphanumeric designation, a letter designator followed by a roman numeral used to identify the two specific characteristics of an aircraft: approach speed and wingspan. The letter designator is used to identify the aircraft approach category based upon aircraft approach speeds, and the roman numeral designates the ADG in terms of wingspan. Generally, aircraft approach speed affects runway length and runway-related facilities, such as navigational aids, while aircraft wingspan primarily affects separation criteria involving taxiways and taxilanes. It is not unusual for the critical aircraft and ARC to be adjusted over time as the aircraft fleet evolves. **Table 4.1-8** summarizes the FAA aircraft classifications as presented in AC 150/5300-13A Change 1, and it also lists typical aircraft by aircraft approach category and ADG.

Aircraft approach categories A and B typically include small piston-engine and turboprop aircraft and a limited number of smaller business jets having approach speeds of less than 121 knots. Categories C, D, and E consist of the larger jet and turboprop aircraft generally associated with commercial and/or military use. ADG I and II primarily include small piston aircraft, very light, light, and midsize business jets, and a variety of single- and twin-engine turboprop aircraft. ADG III, IV, and V include a limited number of large business jet models that have entered the fleet over the last 5–7 years, including the Gulfstream G350, G450, and G550, as well as the majority of the commercial jet aircraft fleet. ADG VI includes very large jets such as the Airbus A380 and the Antonov 124 transport aircraft.

Table 4.1-8: Federal Aviation Administration Airport Reference Code

AIRCRAFT APPROACH CATEGORY		
CATEGORY	**APPROACH SPEED (KNOTS)**	**TYPICAL AIRCRAFT BY APPROACH CATEGORY**
A	< 91	Cessna 172, Beech Bonanza, Cirrus SR-22, Diamond DA-42
B	91 < 121	Cessna 441, Beech 1900C, King Air 200, Citations II/III/V, Falcon 2000
C	121 < 141	Astra Galaxy, Challenger 604, CRJ, Global Express, Citations VI/VII/X, Airbus A320, Boeing BBJ, Boeing-737-100/300/400/500/700, Boeing757, Boeing767
D	141 < 166	Gulfstream G400/G500/G550, Airbus A310-300, A330-300, A340, Boeing 737-800/900 w/winglets, Boeing747, Boeing777-300, DC-10, MD-11
AIRPLANE DESIGN GROUP (ADG)		
DESIGN GROUP	**WINGSPAN (FEET)**	**TYPICAL AIRCRAFT BY ADG**
I	< 49	Cessna 172, Cessna 402, Beech 400A, Cirrus SR-22, Diamond DA-42
II	49 < 79	Beech 1900C, King Air 200, CRJ-200, Citations V & X, Falcon 2000, Gulfstream G350/G450
III	79 < 118	Bombardier CRJ-700, Airbus A318/A319/A320/A321, Boeing 727, Boeing 737, MD-80, DC-9, Gulfstream G550, G650
IV	118 < 171	Airbus A300/A310, Boeing 757/767, DC-8, MD-11
V	171 < 214	Airbus A330/A340/A350, Boeing 747, Boeing 777, Boeing 787-8/-9
VI	214 < 262	Airbus A380, Antonov 124

SOURCE: Federal Aviation Administration, AC 150/5300-13A, *Airport Design* (Change 1), February 2014.
PREPARED BY: Ricondo & Associates, Inc., July 2016.

To determine the facility requirements at EYW, a critical aircraft was selected based upon the types of aircraft generally operating at the Airport—aircraft with more than 500 annual operations and that are anticipated in the future based upon the forecast fleet mix and operation types, as the aviation forecasts depicted in Section 3.

The Boeing 737-700 currently is the Airport's critical aircraft, based upon wingspan and approach speed, and it is anticipated to remain the critical aircraft through the planning horizon. This aircraft falls within approach category C and ADG III. Thus, the appropriate ARC for the Airport is C-III. Taxiway/taxilane width and fillet standards and, in some instances, runway-to-taxiway and taxiway/taxilane separation requirements are determined by the TDG. The TDG for the Boeing 737-700 is TDG 3.

4.1.2.2 FAA Design Standards

Table 4.1-9 presents the dimensional design standards for ARC C-III and TDG 3, as listed in FAA AC 150/5300-13A (Change 1), as well as the key dimensions for the existing airfield facilities. This table provides the foundation for assessing future facility needs.

Table 4.1-9: Federal Aviation Administration Design Standards for ARC C-III and TDG 3

	EXISTING RUNWAY		AIRPORT REFERENCE CODE C-III STANDARDS	TAXIWAY DESIGN GROUP 3 STANDARDS
	RWY 9	RWY 27		
Runway Centerline to Holdline	152 feet	152 feet	250 feet	N/A
Runway Centerline to Taxiway/Taxilane Centerline	315 feet		400 feet	N/A
Runway Centerline to Aircraft Parking Area	473 feet		500 feet	N/A
Taxiway and Taxilane Separation Standards	-	-	-	N/A
Taxiway Centerline to Parallel Taxiway/Taxilane Centerline	-		152 feet	N/A
Taxiway Centerline to Fixed or Movable Object	68 feet		93 feet	N/A
Taxilane Centerline to Parallel Taxilane Centerline	-		140 feet	N/A
Taxilane Centerline to Fixed or Movable Object	-		81 feet	N/A
RUNWAY PROTECTION ZONE DIMENSIONS				
Length	1,700 feet		1,700 feet	N/A
Inner Width	500 feet		500 feet	N/A
Outer Width	1,010 feet		1,010 feet	N/A
RPZ Acres	29.465		29.465	N/A
RUNWAY DESIGN STANDARDS				
Runway Width	100 feet		150 feet 1/	N/A
Runway Shoulder Width	10 feet		20 feet 1/	N/A
Runway Blast Pad Width	100 feet		200 feet	N/A
Runway Blast Pad Length	150 feet		200 feet	N/A
Runway Safety Area Width	350–400 feet		500 feet	N/A
Runway Safety Area Length Prior to Landing Threshold	240 feet	240 feet	600 feet	N/A
Runway Safety Area Length Beyond Runway End	240 feet	240 feet	1,000 feet	N/A
Runway Object Free Area Width	500 feet		800 feet	N/A
Runway Object Free Area Length Beyond Runway End	240 feet	240 feet	300 feet	N/A
TAXIWAY DIMENSIONAL STANDARDS				
Taxiway Width	-		-	50 feet
Taxiway Edge Safety Margin	-		-	10 feet
Taxiway Shoulder	N/A		-	20 feet
Taxiway Safety Area Width	79 feet		118 feet	-
Taxiway Object Free Area Width	131 feet		186 feet	-
Taxilane Object Free Area Width	Varies		162 feet	-

NOTES:

1/ For airplanes with maximum certificated takeoff weight of 150,000 pounds or less and approach visibility minimums of not less than three-quarter miles, the standard runway width is 100 feet, the shoulder width is 20 feet, and the runway blast pad width is 140 feet.

SOURCE: Federal Aviation Administration, AC 150/5300-13A, *Airport Design* (Change 1), February 2014.
PREPARED BY: Ricondo & Associates, Inc., July 2016.

4.1.2.3 Runway Geometry

As indicated in Section 4, the Airport is not anticipated to experience significant runway capacity constraints during the planning period. Nonetheless, runways should be designed with adequate length, width, and pavement strength to accommodate the most demanding or critical aircraft. The runways should be designed in accordance with the standards developed by the FAA, using the ARC and Runway Design Code systems.

The existing runway geometry deficiencies are illustrated on Exhibit 4.1-8 and are described in more detail in this subsection.

Runway Length

This subsection discusses the runway length that would allow the Airport to meet the operational requirements of current and forecast users. Runway length is a critical component at each airport. While insufficient runway length may restrict operations by some aircraft, too long of a runway may result in unnecessary maintenance costs. As reflected in Section 2, Runway 9-27 has an overall length of 5,075 feet and a width of 100 feet.

The runway length analysis determines the maximum runway length required to accommodate various aircraft at expected ranges (longest nonstop distances to be flown from EYW). According to FAA planning guidance, the recommended length of a primary runway is determined by considering either the family of aircraft with similar performance characteristics or a specific aircraft type needing the longest runway. In either case, the choice should be based on aircraft that are reasonably expected to use the runway on a regular basis, which is at least 500 operations a year (landings and takeoffs combined), as defined in AC 150/5325-4B, *Runway Length Requirements for Airport Design*.[5]

AC 150/5325-4B states: "For federally funded projects, the airport designer must take into account the length of haul (range) that is flown by airplanes on a substantial use basis." This requirement is predicated on the fact that aircraft takeoff weights are influenced by the amount of fuel payload required to travel to the destination, including minimum fuel reserves prescribed by the FAA. Therefore, in determining runway length requirements to serve aircraft departures, the nonstop markets that are forecast to be served from the Airport through 2035 were considered; these markets are summarized in **Table 4.1-10**, along with the distance from EYW and anticipated aircraft type for each route.

[5] Federal Aviation Administration, Advisory Circular 150/5325-4B, *Runway Length Requirements for Airport Design*, July 2005.

Table 4.1-10: Nonstop Markets Served from EYW (through 2035)

NONSTOP MARKET	DISTANCE FROM EYW (NAUTICAL MILES)	AIRCRAFT TYPE
Atlanta, GA (ATL)	561	B737-700, CRJ-700, CRJ 900, A319, B717-200
Charlotte, NC (CLT)	639	Embraer 170, Embraer 175, Embraer 190, CRJ 700
Washington, D.C. (DCA)	889	Embraer 170, CRJ 700
Newark, NJ (EWR)	1,039	Embraer 170
New York (Jamaica), NY (JFK)	1,052	Embraer 190
Chicago, IL (ORD)	1,087	Embraer 170
Toronto, Canada (YYZ)	1,171	B737-700, Embraer 175
Boston, MA (BOS)	1,206	Embraer 190

SOURCE: Ricondo & Associates, Inc., *EYW Master Plan Design Day Flight Schedules*, November 2016; Monroe County Department of Airports, January 2019.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

The runway length requirements presented herein were also defined in accordance with the various aircraft manufacturers' manuals on aircraft characteristics for airport planning. These manuals provide information on most of the factors that influence the runway length required for aircraft operations. Other sources, such as FAA advisory circulars, were also used for those factors not covered in the manuals.

Planning Factors

The planning factors that were used in the runway length determination included the following:

- **Aircraft Type:** The runway length analysis is based on the aircraft fleet mix identified in the DDFS for the forecast scenarios. Runway length requirements were considered for aircraft operating long-haul international flights.
- **Aircraft Weight:** Aircraft weight is the single most important factor when conducting a runway length analysis. As the weight of a particular model of aircraft increases, the runway length requirement increases for a given condition. The weight of each aircraft type can vary considerably depending on payload (passengers, baggage, and cargo) and the amount of fuel on board to fly a defined stage length.
- **Engine Model:** Since engine models for aircraft operating long-haul international routes cannot be identified at this point, all engine model variations were considered in this evaluation.
- **Weather (temperature, prevailing winds, etc.):** Performance characteristics of the most demanding weather conditions that typically occur at the Airport were considered. The runway length requirements provided herein reflect the aircraft performance characteristics during the manufacturer-defined "hot

day" (84°F to 92°F) and zero-wind conditions. The maximum daily temperature at EYW is 89.4°F, and occurs during the month of August.[6]

- **Flap Settings:** Most aircraft have a variety of flap settings that affect runway length requirements. The optimal aircraft flap settings for takeoff performance were used in the analyses.
- **Airport Elevation:** Aircraft performance is also affected by the elevation of the airfield. The runway length requirements were adjusted to consider the published Airport airfield elevation of 435 feet above mean sea level.
- **Runway Surface Conditions:** AC 150/5325-4B addresses the implications of wet, slippery pavement conditions. In accordance with this document, landing runway length requirements should be increased to accommodate wet pavement conditions when assessing the needs of turbojet-powered aircraft. When data pertaining to landing distances on wet runways are unavailable, a net increase of 15 percent is recommended. Takeoff runway length requirements prescribed by the aircraft manufacturers do not require adjustments to account for wet pavement conditions.
- **Runway Gradient:** The runway lengths obtained from the Aircraft Characteristics for Airport Planning manuals were increased by 370.0 feet, in order to account for 37.6 feet of elevation difference between the highest and lowest points along the Runway 5R-23L centerline, as prescribed in AC 150/5325-4B, §509.
- **Aircraft Fleet Mix:** As aircraft performance characteristics vary, the establishment of a preferred runway length does not require evaluation of every aircraft type. Only the most demanding aircraft types, in terms of runway length and width, need to be evaluated. For the purposes of this analysis, the aircraft fleet mixes contained in the 2035 DDFS were sorted to identify aircraft anticipated to operate long-haul international flights from EYW.

Takeoff Runway Length Requirements Based on Stage Length

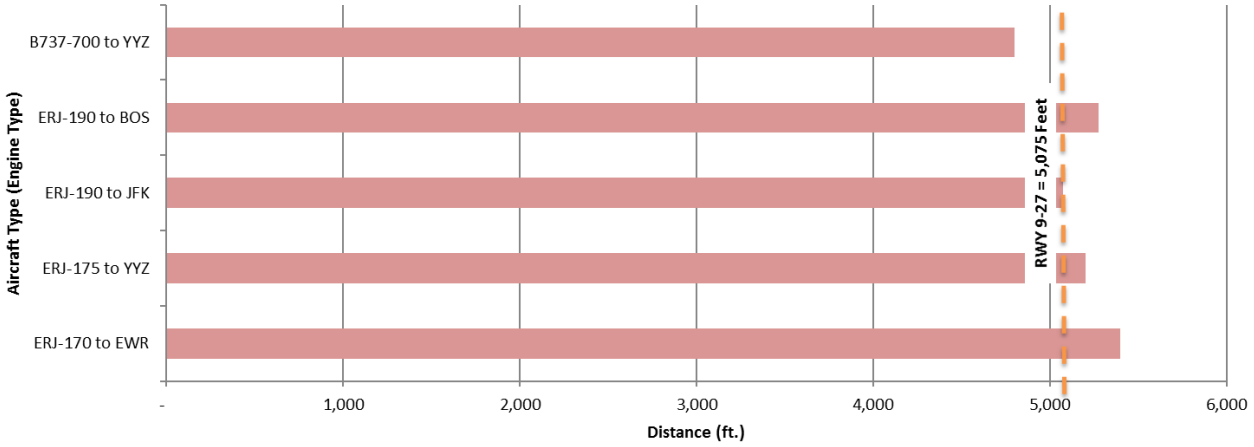
Exhibit 4.1-9 presents the required takeoff runway length required to reach approximately a 1,100 to 1,200 nm stage length (such as a departure for EWR, JFK, ORD, YYZ, and BOS), on a hot day (30° C, i.e. 86° F), at the takeoff weight required for this range with a 100 percent load factor.

As shown, the ERJ-170, ERJ-175, and ERJ-190 require more runway than available to take off on Runway 9-27 with a full load of passengers to reach a destination between 1,100 nm and 1,200 nm from EYW:

- 5,400 feet for the ERJ-170 (EYW to EWR)
- 5,275 feet for the ERJ-190 (EYW to BOS)
- 5,200 feet for the ERJ-175 (EYW to YYZ)
- 5,075 feet for the ERJ-190 (EYW to JFK)

[6] Florida Climate Center, *Key West International Airport, 30 Year Daily Temperature and Precipitation Normals 1981-2010*, https://climatecenter.fsu.edu/products-services/data/1981-2010-normals/key-west (accessed September 2016.).

Exhibit 4.1-9: Takeoff Distance Requirements for 1,100/1,200-nm Stage Length



Notes:

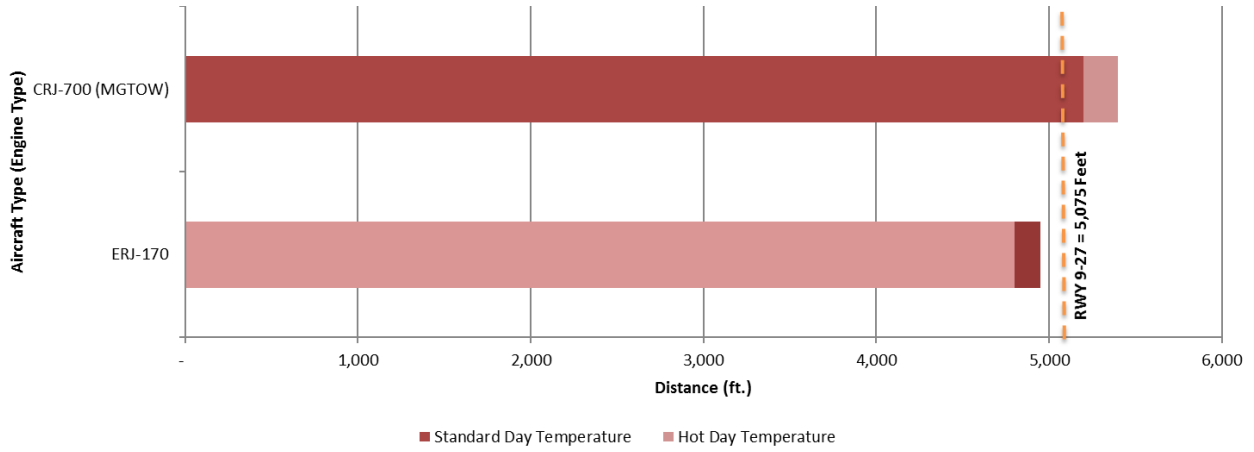
1/ Typical airway routing in Nautical Air Miles based on 85% Annual Enroute Winds

2/ Assumes a passenger +bag weight of 228 lbs per person

SOURCE: Ricondo & Associates, Inc., September 2016 (Aircraft Performance Manuals); Flight Engineering, LLC., February 2019
PREPARED BY: Ricondo & Associates, Inc., November 2016.

Exhibit 4.1-10 presents the required takeoff runway length required to reach approximately a 900-nm stage length (such as a departure for Washington, D.C.), on both a standard temperature day (15° C, i.e. 59° F) and a hot day (30° C, i.e. 86° F), at the takeoff weight required for this range with a 100 percent load factor. This information is presented as a bar graph reflecting the takeoff runway length required for the aircraft anticipated to operate from EYW through 2035.

Exhibit 4.1-10: Takeoff Distance Requirements at Maximum Allowable Takeoff Weight for 900-nm Stage Length

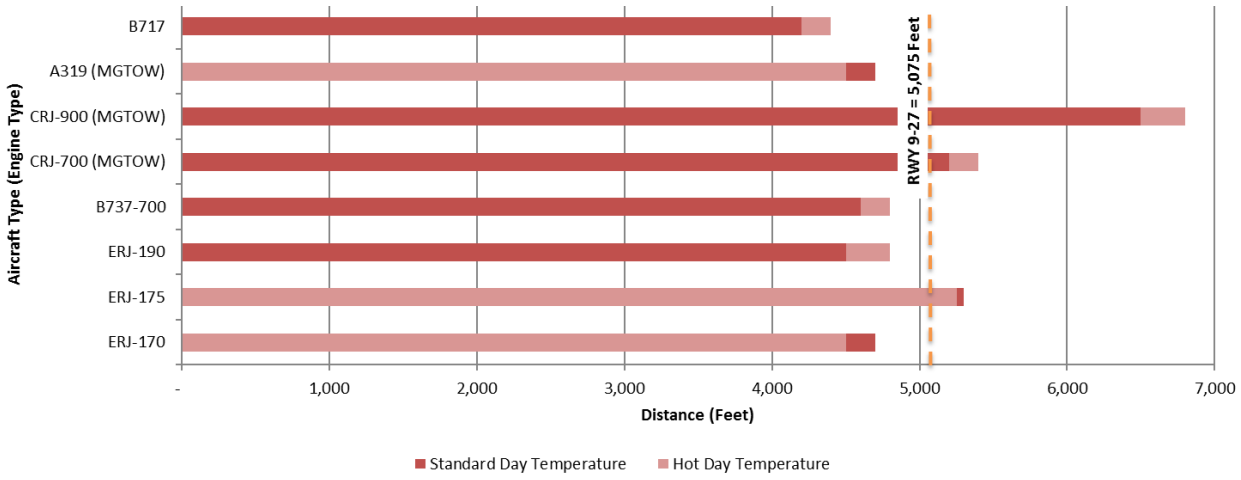


SOURCE: Ricondo & Associates, Inc., September 2016 (Aircraft Performance Manuals).
PREPARED BY: Ricondo & Associates, Inc., September 2016.

As shown, the ERJ-170 could take off on Runway 9-27 with a full load of passengers and reach a destination approximately 900 nm from EYW on a hot day. It should be noted that the runway length required on a standard day is greater than the one required on a hot day. Also, this analysis was performed for the CRJ-700 assessed at maximum gross takeoff weight (MGTOW) because of the inability to quantify the runway length requirements for a specific stage length using the performance data contained in the aircraft planning manuals published by Bombardier.

Exhibit 4.1-11 presents the required takeoff runway length required to reach approximately a 650-nm stage length (such as a departure for Charlotte, NC or Atlanta, GA), on both a standard temperature day (15° C, i.e. 59° F) and a hot day (30° C, i.e. 86° F), at the takeoff weight required for this range with a 100 percent load factor. This information is presented as a bar graph reflecting the takeoff runway length required for the aircraft anticipated to operate from EYW through 2035.

Exhibit 4.1-11: Takeoff Distance Requirements at Maximum Allowable Takeoff Weight for 650-nm Stage Length



SOURCE: Ricondo & Associates, Inc., September 2016 (Aircraft Performance Manuals).
PREPARED BY: Ricondo & Associates, Inc., September 2016.

It should be noted that this analysis was performed for the CRJ-700, CRJ-900, and A319 assessed at MGTOW because of the inability to quantify the runway length requirements for a specific stage length using the performance data contained in the aircraft planning manuals published by Bombardier and Airbus.

As shown, the B717, B737-700, A319, ERJ-170 and ERJ-190 could take off on Runway 9-27 with a full load of passengers and reach a destination approximately 650 nm from EYW on a hot day. The ERJ-175 requires slightly more runway than available to take off: 5,250 feet on a standard day and 5,200 feet on a hot day. The CRJ-700 and CRJ-900 require more runway than available to take off: 5,200 feet on a standard day and 5,400 feet on a hot day for the CRJ-700; 6,500 feet on a standard day and 6,800 feet on a hot day for the CRJ-900.

Conclusion

To serve the furthest markets with minimum or no payload restrictions, a takeoff runway length between 5,200 feet and 5,400 feet would be required. It is recommended that Runway 9-27 be extended by a minimum of 200 feet to provide 5,275 feet of usable length for departures. This would allow the airlines that operate at the Airport to serve Boston, New York, and Toronto without any weight restrictions. Without a runway extension, certain types of aircraft may only be operated with payload restrictions (typically with less than a full load of passengers) when departing from EYW.

Runway Width

The FAA has determined runway width requirements based upon the critical aircraft's approach speed and wingspan. The various widths provide a certain margin of error to account for wind effects on aircraft landing and taking off. Referencing the FAA AC 150/5300-13A (Change 1), the standard runway width of a C-III runway is 150 feet wide. Although Runway 9-27 has a width of 100 feet, according to the aforementioned AC, it is acceptable for the runway to be 100 feet wide if the critical aircraft has a maximum take-off weight of less than 150,000 pounds.

Runway Pavement Strength

As mentioned in Section 2.2.1, Runway 9-27 has pavement strengths of 75,000 pounds for single-wheel landing gears, 125,000 pounds for dual-wheel landing gears, and 195,000 pounds for dual-tandem wheel landing gears. These pavement conditions are suitable for all aircraft types presently operating and anticipated to operate at EYW within the planning horizon.

Runway Pavement Conditions

As indicated in the FDOT's *Pavement Evaluation Report*, and highlighted on Exhibit 2-4, the PCI[7] of Runway 9-27 average is 76, indicating that the runway is in good condition. While no major pavement rehabilitation is anticipated in the short-term, Monroe County should continue conducting regular pavement repairs, such as crack sealing, when needed. Although this should be sufficient maintenance to uphold the integrity of the runway, rehabilitation of the runway will most likely be necessary in the long-term.

Runway Shoulder Width

Currently, Runway 9-27 has 10 feet of paved shoulders in lieu of the 25 feet paved shoulders that are required for a standard C-III runway. However, according to Table 3-5: *Runway Design Standard Matrix*, footnote 12 in AC 150/5300-13A (Change 1): "For airplanes with maximum certificated takeoff weight of 150,000 lbs or less, the standard runway width is 100 feet, the shoulder width is 20 feet, and the runway blast pad width is 140

[7] The pavement condition index (PCI) is a numerical rating of the pavement condition that ranges from 0 to 100, with 0 being the worst possible condition and 100 being the best possible condition. However, the correlation between the pavement age and PCI values is not linear. The deterioration of the runway accelerates towards the end of the estimated life of runway pavement.

feet."[8] An additional 10 feet of shoulder pavement will be required to meet this standard and should be analyzed during future runway improvements.

Runway Blast Pads

The FAA AC *Airport Design* recommends that runways serving aircraft with an ARC of C-III have blast pads located at each runway end. These areas are paved, but they are not usually constructed of full-strength pavement. They serve to reduce erosion caused by jet blast produced upon aircraft takeoff. Blast pad dimensions for ADG III aircraft are 95 feet wide by 150 feet long (140 feet long for airplanes with maximum certificated takeoff weight of 150,000 pounds or less). The Runway 27 end has an EMAS bed that serves the purposes of a blast pad. The Runway 9 end is planned to be extended to the edge of the EMAS, which will then also serve the purposes of a blast pad.

Runway-to-Taxiway Separation Distance

The FAA's design standards for runway-to-taxiway separation distances ensure that aircraft can safely operate on parallel taxiways without encroaching the runway safety area, obstacle free zone, runway protection zone, or navigational aids critical areas. For a C-III runway, the FAA requires a 400-foot separation between the runway centerline and the parallel taxiway centerline. The existing runway centerline to the Taxiway A centerline separation is 315 feet. Taxiway A currently does not meet the FAA required separation because of the limited amount of land the Airport has available. Additionally, the existing airfield is surrounded by bodies of water on three sides.

4.1.2.4 Runway Areas

The FAA's design standards for the various runway areas at EYW are presented in this section. The following is a list of the airfield safety areas that were evaluated for the Airport:

- RSAs
- Runway Object Free Areas (ROFAs)
- Obstacle Free Zones (OFZs)
- Runway OFZs
- RPZs

The existing Airport Layout Plan (ALP) was used to determine the locations of objects that may affect navigation. The existing runway area deficiencies are illustrated on Exhibit 4.1-8 and are described in more detail in the following subsections.

Runway Safety Area

RSAs are rectangular areas centered on runway centerlines, which, under normal (dry) conditions, are capable of supporting aircraft without causing structural damage to the aircraft or injury to its occupants, should an

[8] Federal Aviation Administration, AC 150/5300-13A, *Airport Design* (Change 1), February 2014.

aircraft inadvertently leave the paved runway surface. To serve this function, the FAA requires RSAs to be: (1) cleared and graded, (2) drained by grading or storm sewers to prevent water accumulation, and (3) free of objects, except those that need to be located in the RSA because of their function (e.g., approach lighting, other NAVAIDS).

Based on the FAA design standards for C-III runways, the RSA for the existing runway should be 500 feet wide and extend 1,000 feet beyond the runway ends. The existing RSA (length and width) does not currently meet these standards. In 2011, the Airport underwent a Runway Safety Area Improvements project to maximize the RSA to the extent practicable due to the surrounding salt ponds. EMAS beds were installed on both ends to mitigate the RSA length issues to the extent practicable. Options to meet the FAA runway C-III safety area design standards will be evaluated as part of the Runway Safety Area analysis currently underway and scheduled to be completed mid-2017.

Runway Object Free Area

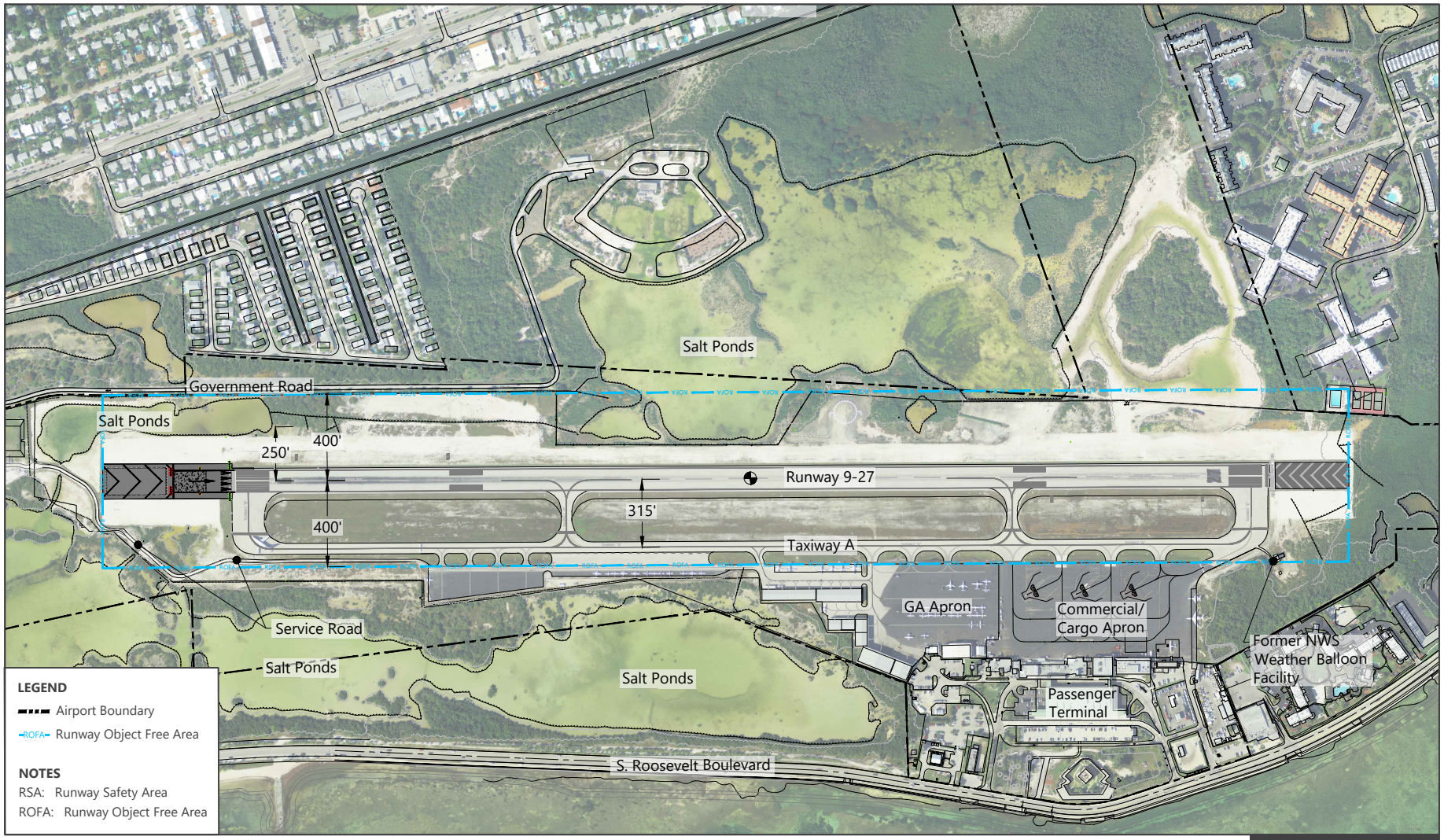
ROFAs are rectangular areas centered on runway centerlines that are required to be clear of objects protruding above the RSA edge elevation, with the exception of those objects that are essential to air navigation or to aircraft ground maneuvering. Objects that are nonessential for either air navigation or aircraft ground maneuvering are not permitted within the ROFA. For runways serving ARC C-III aircraft, ROFAs must be 800 feet wide (i.e., 400 feet on either side of the runway centerline) and extend 1,000 feet beyond the end of the runway or stopway.

The existing ROFA length is the same as the RSA, which extends to the end of the EMAS beds on either runway ends. **Exhibit 4.1-12** identifies non-essential objects inside the limits of the C-III ROFA: on-Airport vehicle service road, Airport property fence, off-Airport private tennis courts and swimming pool, and the former National Weather Station (NWS) balloon launch facility.

Obstacle Free Zone

The OFZs are three-dimensional volumes of airspace that support the transition of ground to airborne aircraft (and vice-versa). The OFZ clearance standards established by the FAA prohibit taxiing and parking aircraft or locating other objects where they would penetrate this airspace, except frangible NAVAIDS or fixed-function objects. The OFZ consists of the airspace up to 150 feet above the established airport elevation and along the runway and extended runway centerline. The OFZ can be further categorized as inner-approach OFZs and inner-transitional OFZs.

The required runway OFZ for runways serving aircraft in excess of 12,500 pounds is typically 400 feet wide and extends 200 feet beyond each end of the runway. The OFZs for the existing runway meet current FAA standards. Currently, the only objects within the runway OFZs are NAVAIDS, which are required to be located there because of their function.



SOURCE: Basemap and Aerial Photography, Jacobs, September, 2015
PREPARED BY: Ricondo & Associates, Inc., January 2017.

EXHIBIT 4.1-12

NORTH 0 700 ft

Existing Conditions and Runway Object Free Area Penetrations

Drawing: P:\Project-Chicago\EYW\On-Call\2-ROFA MOS\CAD\Ex 1_Existing Conditions ROFA.dwgLayout: Ex1_ROFA Plotted: Mar 6, 2019, 09:31AM

Runway Protection Zone

The RPZ is a trapezoidal area centered on the extended runway centerline. The length and width of the RPZ are contingent on the size of the aircraft operating on the runway, as well as the type of approach (e.g., visual, instrument) and approach minimums available. As a result, the criteria for the RPZ may vary for each end. RPZs are designed to enhance the protection of people and property on the ground. To achieve this goal, the FAA recommends that the airport operator owns the property inside the RPZ. This area should be free of land uses that create glare and smoke. Also, the FAA recommends that airport operators keep the RPZs clear of incompatible land uses, specifically residences, fuel storage facilities, and places of public assembly (e.g., churches, schools, office buildings, and shopping centers). Typically, a single RPZ is associated with each runway end; however, the FAA has suggested that separate approach and departure RPZs be defined for any runway end with a displaced arrival threshold.

Since the previous Master Plan and ALP were completed, the critical aircraft and ARC have changed, as well as the instrument approach procedures. As such, the RPZs depicted on the current ALP are outdated. RPZ dimensions for C-III aircraft are provided in **Table 4.1-11**, which is based on instrument approach visibility minimums.

Table 4.1-11: Runway Protection Zone Dimensions for C-III Aircraft

	VISIBILITY MINIMUMS	
	NOT LOWER THAN 1 MILE (RUNWAY 9 END)	NOT LOWER THAN ¾ MILE (RUNWAY 27 END)
Approach RPZ	500′ x 1,010′ x 1,700′	1,000′ x 1,510′ x 1,700′
Departure RPZ	500′ x 1,010′ x 1,700′	500′ x 1,010′ x 1,700′

SOURCE: Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design* (Change 1), February 2014.
PREPARED BY: Ricondo & Associates, Inc., July 2016.

The Runway 9 end RPZ has approach visibility minimums not lower than 1 mile, while the Runway 27 end RPZ has approach visibility minimums not lower than three-quarter miles. **Exhibit 4.1-13** depicts these RPZs and highlights incompatible land uses, such as buildings and roadways. Since the RPZ dimensions increased on the Runway 27 end, coordination with the FAA will be required to determine if these land uses can remain inside the RPZ; an RPZ Alternatives Analysis report should document mitigation alternatives and associated impacts and be submitted to the FAA for review.

Since the RPZ extends beyond the existing property limits, it is also recommended that Monroe County acquire fee title to all land within the RPZ and/or acquire navigation easements that adequately restrict current and future use of the land surface to preclude incompatible uses and convey the following: the right of flight with inherent noise and vibration below the approach surface, the right to remove obstructions encroaching existing and future approach surfaces, and a restriction against the establishment of future obstructions.



SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., January 2017.

EXHIBIT 4.1-13

NORTH 0 □00 ft

Drawing: I :\EYW\2015 Master Plan\4-Facility Requirements\Airfield Geometry\CAD\Exhibit 4.1-12_RPZ based on C-III.dwgLayout: 11x17L Plotted: Jan 20, 2017, 0 :21AM

Existing Runway Protection Zones and Incompatible Land Uses

4.1.2.5 Taxiway Geometry

The existing airport taxiways serve as routes for aircraft to maneuver to and from various portions of the Airport. FAA taxiway design standards are determined by ADG and TDG for the critical aircraft. An assessment of taxiway geometry principles and dimension standards was conducted, based on guidance set forth in FAA AC 150/5300-13A, *Airport Design*, for ADG III and TDG 3 aircraft. The existing taxiway geometry deficiencies are illustrated on Exhibit 4.1-8 and are described in more detail in the following subsections.

Wide Expanse of Pavement

Both Taxiways B and E are runway entry taxiways with wide expanses of pavement.

Direct Access from Apron to Runway

Taxiways C and D provide direct access from the apron to the runway.

Taxiway Fillets

All Taxiway A connectors into the apron need wider pavement/fillets to allow cockpit over centerline taxiing.

4.1.3 AIRCRAFT APRON

The following issues were identified by Airport staff and should be evaluated in the Alternatives Development section:

- The need to identify areas for the staging of GSE
- Passenger and vehicle circulation on the ramp and the need to evaluate whether the installation of a passenger boarding bridge could improve the level of service at the Airport
- The existing aircraft ramp layout and the need to maximize the number of aircraft parking positions in front of the passenger terminal, including power in/power out taxiing
- The proximity of the GA and commercial aircraft ramps and the need to preserve the integrity of the SIDA
- The need to evaluate the existing taxiway layout, including the departure taxiway routes and the access points between the existing and proposed apron and the runway
- The accommodation of large GA aircraft, including business jets on the ramp and possible encroachments into the existing Taxiway A safety areas

4.1.4 INSTRUMENT APPROACHES

There are two RNAV/GPS approaches at EYW, one to each runway end, as well as an NDB approach (circling only) and a radar approach. The instrument approaches available at EYW are considered adequate, and no significant upgrades to instrument approach procedures are planned.

4.1.5 AIRFIELD LIGHTING

Airports are required to install and maintain multiple airfield lighting systems, as noted in 14 CFR Part 139. The rotating beacon serves as a visual indicator of the Airport's location. The beacon at EYW is located south of the ARFF facility. The rotating beacon is reported to be fair condition. The beacon was installed in the summer of 1990 and the tower portion is in good shape. However, the light housing and mechanics should be refurbished or replaced in the next 5 to 10 years based on its current reported condition and the FAA's typical useful life.

Runway 9-27 and taxiway A are both equipped with medium intensity lighting systems for night operations and restricted visibility.

The runway lighting system is reported to be in good working order. However, the taxiway edge lighting system and associated circuits are reaching the end of their serviceable life. All of this equipment is scheduled to be replaced concurrently with the rehabilitation of the taxiways.

4.1.6 AIRFIELD SIGNAGE

While the existing airfield signage is adequate, given the level of activity at the Airport, additional location, direction, and runway holding signs could be added in order to provide additional guidance to pilots on the airfield.

Throughout the planning period, existing signage should be maintained in proper working order. Additionally, as other airfield pavement projects are conducted, new signage should be installed that meets FAA design criteria. The types and number of new signs that are likely to be required during the planning period will depend upon the selected development alternatives.

4.1.7 PAVEMENT MARKINGS

Airport pavements are marked with painted lines and numbers in order to aid in the identification of the runways from the air and to provide information to the pilot during the approach phase of flight. There are three standard sets of markings used, depending on the type of runway:

- Basic: For runways with only visual or circle-to-land procedures. These markings consist of runway designation markers and a centerline stripe.
- Nonprecision: For runways to which a straight-in, nonprecision instrument approach has been approved. These markings consist of runway designation markers, a centerline stripe, and threshold markings.
- Precision: For runways with a precision instrument approach. These markings consist of the nonprecision markings, plus aiming point markings, touchdown zone stripes, and side stripes indicating the extent of the full strength of the pavement.

Depending on the type of aircraft activity and physical characteristics of the pavement, additional markings may be required for any of the three categories of markings. Runway pavement and displaced threshold markings are painted white, while taxiway pavement markings are painted yellow.

A description of the existing markings on airfield pavement areas was provided in Section 2. All areas have the appropriate markings for the existing conditions. For example, both the Runway 9 and Runway 27 ends have nonprecision approach markings. All taxiways are marked with centerline markings.

All runway and taxiway markings periodically need to be remarked in order to remain visible to the users of the Airport. As future pavement improvements are made, airfield markings should be included that comply with FAA AC 150/5340-1L, *Standards for Airport Markings*.

4.1.8 VISUAL LANDING AIDS

The runway ends are equipped with four-box PAPI lighting systems that provide aircraft with a visual descent reference during approach. As indicated on Exhibit 2-3, the PAPIs are located on the left side of each runway end. In addition, both runway ends are equipped with REIL. The REILs consist of two synchronized flashing lights, located on each side of the runway threshold, that provide rapid and positive identification of the runway end. Throughout the planning period, existing visual landing aids should be maintained in proper working order. However, no additional visual landing aids are anticipated at the Airport.

4.1.9 WIND DIRECTION INDICATORS

The lighted segmented circle and wind cone is in good condition. No improvements are recommended to the existing system, beyond normal maintenance.

4.1.10 SUMMARY OF RECOMMENDED IMPROVEMENTS

The following improvements are recommended to meet FAA design standards:

- An additional 200 feet of runway length to provide 5,275 feet of usable length for departures
- An additional 10 feet of shoulder pavement on either side of the runway
- For a C-III runway, the FAA requires a 400-foot separation between the runway centerline and the parallel taxiway centerline—further analysis required and/or Request for Modification of Standards (MOS)
- RSA length and width improvements and/or request for MOS
- ROFA length and width improvements and/or request for MOS

RPZ penetrations require coordination with FAA (an RPZ Alternatives Analysis report should document mitigation alternatives and associated impacts and be submitted to the FAA for review.)

4.2 Passenger Terminal

This section describes the facilities that are needed to support the passenger activities through the planning period, including the unique purpose of each terminal function. In general, this section discusses the location

of the main terminal facilities, such as public and nonpublic facilities used by passengers, airlines, other tenants, Monroe County, and other agencies.

The facilities and space requirements that are described in this section represent the basis for forming the preferred terminal development plans. The terminal space requirements set forth in this section do not themselves constitute a facility program, as they do not address program considerations, such as potential constraints imposed by the site, environmental considerations, or implementation strategies. The requirements do not address airport areas such as restrooms, MEP, and circulation, since these are typically based on concept development or local building codes.

4.2.1 PLANNING ACTIVITY LEVELS

Each airport has its own distinct characteristics due to differences in airline schedule, the percentage of business travelers, and the mix of origin and destination passengers versus transfer passengers. For the purpose of identifying future facility requirements, design day activity schedules were developed to represent aircraft movements and passenger traffic distribution throughout the hours of the day. These design schedules have been utilized for other demand capacity analyses as part of this Master Plan Update.

The DDFS represent the anticipated flight activities at the Airport for design years 2020, 2025, and 2035. The DDFS included flight-by-flight data, such as load factors and origination/destination shares. **Table 4.2-1** summarizes and compares key metrics from each DDFS pertaining to peak hour levels for flight operations, as well as for arriving and departing passengers. **Exhibit 4.2-1** illustrates the diurnal levels of originating and departure passengers at their scheduled time of departure. The exhibit indicates that the peak hour activity level for originating passengers occurs between 11:00 a.m. and 12:00 p.m. for all forecast DDFS.

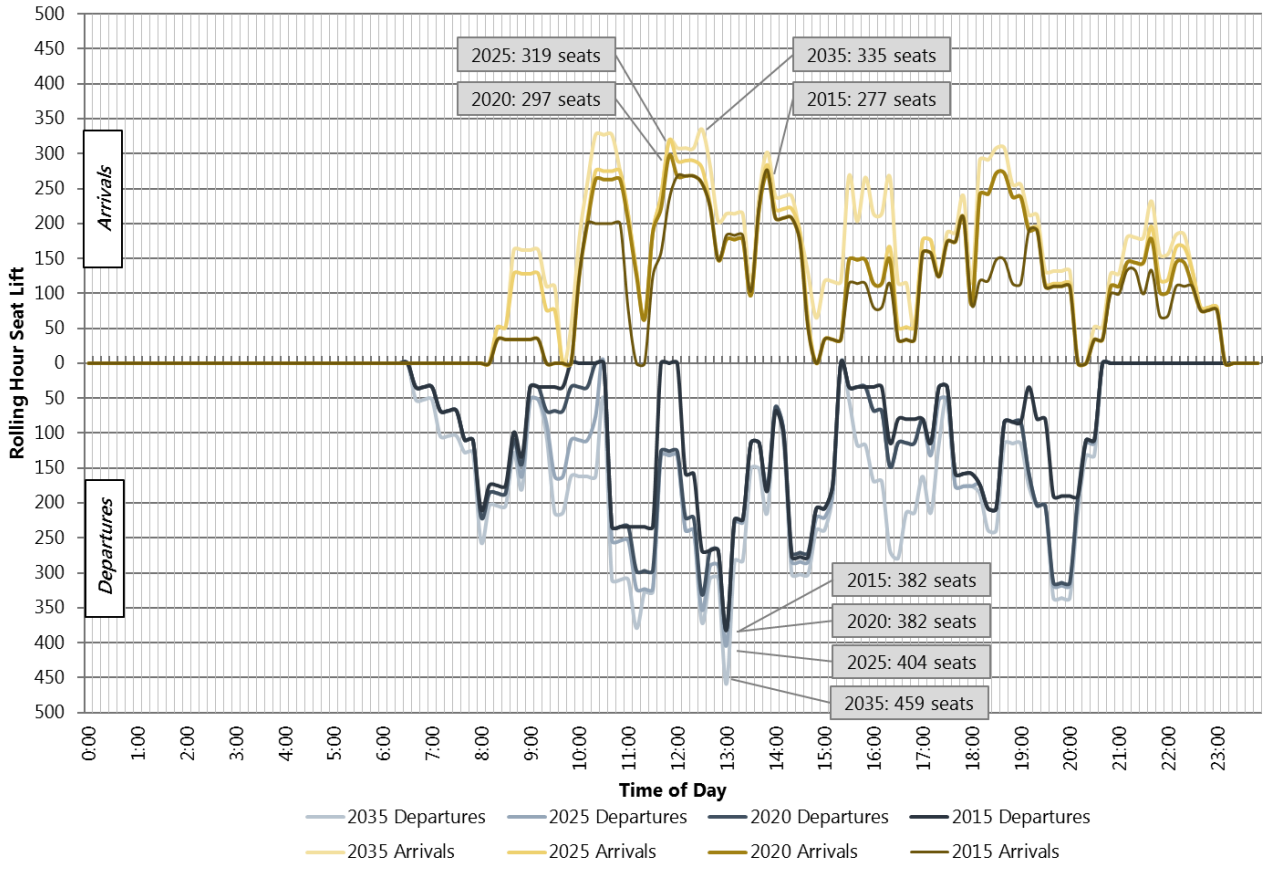
A DDFS was developed for each of the design years by comparing the forecast annual growth and applying this growth to the current flight schedule.

Table 4.2-1: Design Day Flight Schedule Metrics

DAILY	UNITS	2015	2020	2025	2035
Departures					
Aircraft Operations	operations	28	33	34	37
Seats	passengers	1,716	2,039	2,216	2,683
Enplaned Passengers	passengers	1,312	1,568	1,757	2,096
Originating Passengers	passengers	1,308	1,562	1,752	2,090
Arrivals					
Aircraft Operations	operations	28	33	34	37
Seats	passengers	1,716	2,039	2,224	2,687
Deplaned Passengers	passengers	1,232	1,466	1,646	1,969
Terminating Passengers	passengers	1,227	1,458	1,639	1,960
PEAK HOUR					
Departures					
Aircraft Operations	operations	6	6	6	6
Seats	passengers	382	382	404	459
Enplaned Passengers	passengers	292	301	324	361
Originating Passengers	passengers	290	299	323	359
Arrivals					
Aircraft Operations	operations	5	5	5	5
Seats	passengers	277	297	319	335
Deplaned Passengers	passengers	213	207	225	262
Terminating Passengers	passengers	212	207	223	260
Overall					
Aircraft Operations	operations	**56**	**66**	**68**	**74**

SOURCE: Ricondo & Associates, Inc., September 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

Exhibit 4.2-1: Diurnal Passenger Activity Levels



SOURCE: Ricondo & Associates, Inc., September 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

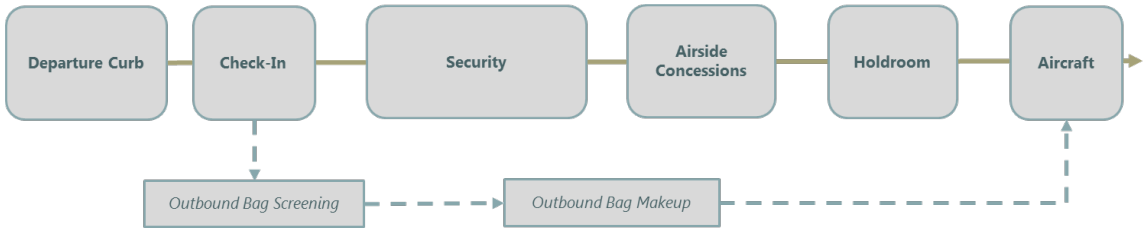
4.2.2 PLANNING BASIS

This section describes the planning basis used to determine future terminal facility requirements. The planning basis includes: passenger processing sequences, terminal operating parameters, and passenger attributes, which were intended to be specific to EYW. Sources used to develop the planning basis included: site observations made by team member traveling to EYW; data collected at comparable airports; and industry published guidelines representing best practices pertaining to processing rates and level of service.

4.2.2.1 Passenger Processing Sequence

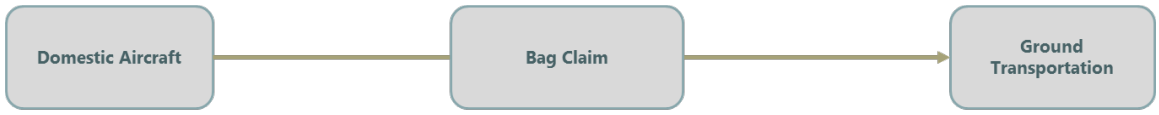
Exhibit 4.2-2 and **Exhibit 4.2-3** illustrate typical passenger processing sequences for originating (departing) passengers and destination (terminating) passengers.

Exhibit 4.2-2: Originating Passenger Flows



SOURCE: Ricondo & Associates, Inc., September 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

Exhibit 4.2-3: Destination Passenger Flows



SOURCE: Ricondo & Associates, Inc., September 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

4.2.2.2 Level of Service Standards

Level of Service (LOS) standards define key performance objectives for passenger transaction wait times and the amount of space provided to passengers waiting in queue. **Table 4.2-5** lists the LOS standard framework for the design of terminal facilities, as recommended by the International Air Transport Association (IATA) in its *Airport Development Reference Manual* (10th ed.). The following categories comprise the LOS:

- **Overdesign (A/B):** facilities resulting in underutilized spaces with nearly no delays; high maintenance and construction cost relative to facility utilization.
- **Optimum Design (C):** facilities that provide adequate space and reasonable delays; cost of maintenance and construction is equitable to facility utilization.
- **Suboptimum Design (D):** a facility that meets one but not both space and time LOS variables; facility should consider improvements.
- **Suboptimum Design (E):** facilities resulting in breakdown with unacceptable delays; strongly suggest improvements to an over-utilized facility.

The specific LOS standards used for individual processors and functional areas are identified in the following description of operating parameters.

Table 4.2-5: International Air Transport Association Level-of-Service Space-Time Framework

PASSENGER TERMINAL PROCESSOR	NOTES	SPACE STANDARDS FOR WAITING AREAS			WAITING TIME STANDARDS FOR PROCESSING FACILITIES									PROPORTION OF SEATED OCCUPANTS				
UNITS		(ft^2/pax)			Economy Class (min)					Business Class/First Class (min)					(%)			
ADRM 9th Edition		A B	C	D E	A B	C	D E			A B	C	D E			A B	C	D E	
ADRM 10th Edition		Over Design	Optimum	Suboptimum	Over Design	Optimum	Suboptimum			Over Design	Optimum	Suboptimum			Over Design	Optimum	Suboptimum	
Public Departure Hall		>24.8	24.8	<24.8														
Check-in																		
Self-Service Boarding	pass/tagging	>19.4	14.0-19.4	<14.0	<0	0-2	>2			<0	0-2	>2						
Bag Drop Desk	queue width 1.4-1.6 m or 4.5-5.0 ft	>19.4	14.0-19.4	<14.0	<0	0-5	>5			<0	0-3	>3						
Check-in Desk	queue width 1.4-1.6 m or 4.5-5.0 ft	>19.4	14.0-19.4	<14.0	<10	10-20	>20		Business	<3	3-5	>5						
	queue width 1.4-1.6 m or 4.5-5.0 ft	>19.4	14.0-19.4	<14.0	<10	10-20	>20		First	<0	0-3	>3						
Security Checkpoint	queue width 1.2 m or 4 ft	>12.9	10.8-12.9	<10.8	<5	5-10	>10		Fast Track	<0	0-3	>3						
Boarding Gate Lounge																		
Seating		>18.3	16.2-18.3	<16.2											>70%	50%-70%[1]	<50%	
Standing	see notes below	>12.9	10.8-12.9	<10.8														
Baggage Claim Area																		
Narrow Body	Priority bags to be delivered before Economy	>18.3	16.2-18.3	<16.2	<0	0-15	>15		0		0-15	>15						
Public Arrival Hall		>18.3	12.9-18.3	<12.9											>20%	15%-20%	<15%	
CIP Lounge			43.0															

NOTES:

CIP – Commercially Important Passengers

1/ The lower limit is only to be considered if extensive Food and Beverage F&B is provided in the departures lounge or concession zone seating available.

SOURCE: International Air Transport Association, *Airport Development Reference Manual*, 10th ed., March 2014.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

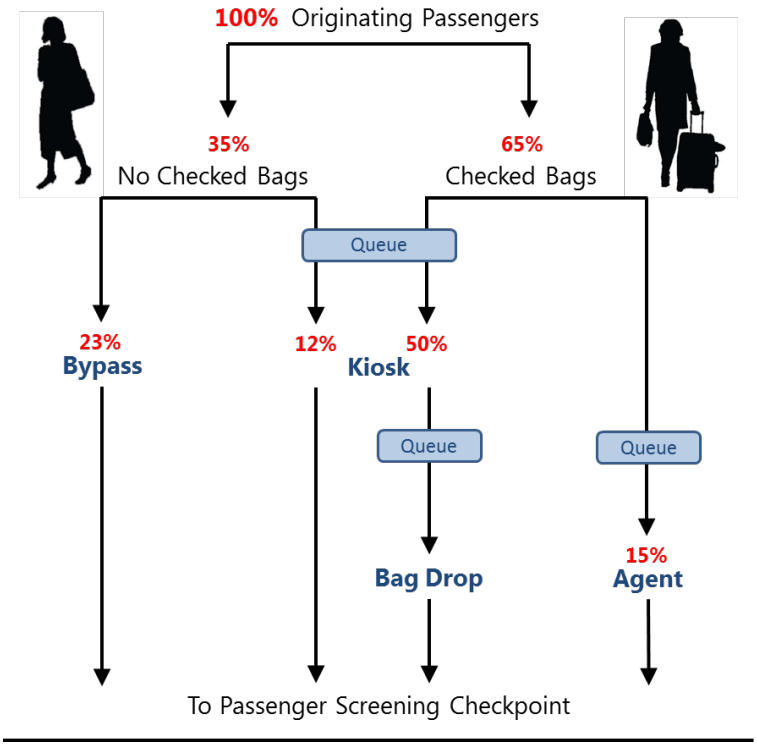
4.2.2.3 Operating Parameters

Check-in

Exhibit 4.2-5 illustrates check-in channel preferences for departing passengers. The rates are based on industry standards and data collected at other airports, since no onsite observations were conducted. Passengers were offered different check-in options, which included full-service counters or a combination of check-in kiosks and bag-drop counters:

- Full-service agent positions—Full-service agents' positions were prioritized to passengers with bags, passengers needing special assistance, such as minors travelling alone, and premium passengers.
- Check-in kiosks (boarding pass and/or self-tag)—The majority of passengers were encouraged to use the kiosk check-in process. Kiosks in the check-in lobby could be used by passengers to acquire boarding passes and baggage tags, whereas kiosks located in other locations, such as the pedestrian bridge or adjacent to the security checkpoint, could only be used by passengers to acquire boarding passes.
- Bag-drop counters—Passengers who are checking bags self-tag their check-in baggage at kiosks and drop them at agent-staffed bag-drop counters.

Exhibit 4.2-4: Check-In Channel Preferences



SOURCE: Ricondo & Associates, Inc., September 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

Table 4.2-6 lists the transaction times and wait times corresponding to desired level service standards for passengers using in-terminal check-in facilities.

Table 4.2-6: Check-In Transaction Times and Level of Service Wait Times

NO CHECKED BAGS		
	WAIT TIME	**TRANSACTION TIME**
Bypass	N/A	N/A
Kiosk	2 minutes	3 minutes
CHECKED BAGS		
	WAIT TIME	**TRANSACTION TIME**
Kiosk	2 minutes	3.5 minutes
Bag Induction	4 minutes	1 minute
Agent	15 minutes	3 minutes

NOTE:

N/A – Not Applicable

SOURCE: Ricondo & Associates, Inc., September 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

Passenger Security Screening Checkpoint

Table 4.2-7 lists the operating parameters for Transportation Security Administration (TSA) screening checkpoints. The analysis used screening rates for standard screening and Pre✓ that are consistent with TSA guidelines for new checkpoints. The percentage of passengers eligible to use Pre✓ was based on average TSA data.

Table 4.2-7: Passenger Security Screening Checkpoint Screening Rates and Level of Service Wait Times

CHECKPOINT TYPE	PERCENTAGE	WAIT TIME	PROCESSING RATE
Pre✓	30%	5 min	250 passengers/hour
Standard	70%	10 min	150 passengers/hour

SOURCE: Ricondo & Associates, Inc., September 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

Holdrooms

Holdrooms consist of the preboarding areas adjacent to aircraft gates, which are used for passenger seating and standing, airline agent check-in podiums, and boarding/deplaning queuing spaces and aisles. Holdroom requirements are based on the predominant or largest aircraft supported by the holdroom. For this analysis,

requirements for holdrooms were developed based on peak hour passenger demand at scheduled time of departure and peak hour number of gates required. **Table 4.2-8** lists other planning factors that were applied to the respective aircraft seating capacities in order to develop the individual holdroom space requirements to support a gate.

Table 4.2-8: Holdroom Planning Criteria

PLANNING FACTORS	UNITS	VALUE	SOURCE
Adjoining holdroom credit	percent	0.9	Airport Cooperative Research Program
Agent counter area 1/	square feet	120.0	Airport Cooperative Research Program
Agent counter positions	positions	2.0	Airport Cooperative Research Program
Aisleway 2/	square feet	180.0	Airport Cooperative Research Program
Aisleway	row	1.0	Airport Cooperative Research Program
Holdroom Calculation 3/			
Seated	percentage	60.0	International Air Transport Association
Standing	percentage	20.0	International Air Transport Association
Seated	square feet	18.0	International Air Transport Association
Standing	square feet	12.0	International Air Transport Association
Queuing	square feet	11.0	International Air Transport Association

NOTES:

1/ Based on 4 feet wide by 30 feet deep.

2/ Based on 6 feet wide and 30 feet deep.

3/ Based on 40 percent seated, 30 percent standing, and 30 percent queuing.

SOURCES: Airport Cooperative Research Program, Report 25, *Air Passenger Terminal Planning and Design,* Vol. 1, *Guidebook,* 2010. International Air Transport Association, *Airport Development Reference Manual*, 10th ed., March 2014.

PREPARED BY: Ricondo & Associates, Inc., September 2016.

Outbound Baggage Makeup

Outbound baggage makeup facility requirements principally pertain to the number and capacity of baggage makeup devices (typically bag carousels, piers, or slides) that receive and accumulate checked bags prior to being loaded onto baggage carts or containers for delivery to outbound aircraft. Bags accumulated on makeup devices have cleared TSA Hold Bag Screening. **Table 4.2-9** lists the criteria used to determine outbound baggage makeup facility requirements, which, for this analysis, were developed in terms of the linear feet of cart staging positions used for flight makeup during the period beginning 120 minutes and ending 30 minutes before scheduled time of departure.

Table 4.2-9: Outbound Baggage Makeup Planning Criteria

OUTBOUND BAGGAGE MAKEUP	UNITS	VALUE	SOURCE
Linear Feet per Cart	feet	6.0	Airport Cooperative Research Program
Overall Bags per Passenger	ratio	0.7	Ricondo & Associates, Inc.
Bags per Cart	bags	40.0	Airport Cooperative Research Program
Cart Close-out Time	minutes	30.0	Airport Cooperative Research Program

SOURCES: Airport Cooperative Research Program, Report 25, *Air Passenger Terminal Planning and Design,* Vol. 1, *Guidebook,* 2010;
PREPARED BY: Ricondo & Associates, Inc., September 2016.

Baggage Claim

Domestic baggage claim capacity is principally determined by the amount of retrieval area, which is defined as a 12-foot band surrounding a baggage claim device that is provided for passengers waiting to claim their checked bags. The analysis is predicated on last bag delivery occurring within 20 minutes of flight arrival. **Table 4.2-10** lists the criteria used to determine the requirements for the domestic baggage claim.

Table 4.2-10: Domestic Baggage Claim Planning Criteria

DOMESTIC BAGGAGE CLAIM	UNITS	VALUE	SOURCE
Last Bag Delivery (after arrivals)	minutes	20.0	International Air Transport Association
Passenger Accumulation	percent	60.0	Ricondo & Associates, Inc.
Retrieval Zone Depth	feet	12.0	International Air Transport Association
Area per Passenger in Retrieval Zone for LOS C	square feet	18.0	International Air Transport Association

SOURCES: International Air Transport Association, *Airport Development Reference Manual*, 10th ed., March 2014; Ricondo & Associates, Inc., July 2015.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

4.2.3 FACILITY REQUIREMENTS

This section discusses the analyses that have been conducted to define functional terminal facility requirements through 2035. Requirements have been developed for the following terminal facilities:

- Check-in Facilities
- Passenger Security Screening Checkpoint
- Holdrooms
- Outbound Baggage Makeup Facilities
- Domestic Baggage Claim

The following is a summary of the gaps between the facility requirements and the current facility capabilities:

- The current check-in facility inventory will be able to accommodate passenger demand levels beyond the planning horizon.
- Additional checkpoint lanes will be required between 2020 and 2025 to accommodate both the increasing demand levels and the ability to accommodate Pre✔ passengers.
- The current holdroom areas are deficient at today's passenger levels.
- Outbound baggage makeup will need to be expanded between 2020 and 2025.
- The current baggage claim retrieval area is deficient in the current terminal.

4.2.3.1 Check-in

Passenger demand for check-in facilities was modeled using spreadsheets to determine the number and types of check-in units that would be needed to maintain the Airport's prescribed LOS standard for check-in wait times. **Table 4.2-11** lists the number of required check-in positions that correlate to the respective DDFS activity levels. The terminal inventory of check-in positions should provide adequate capacity to support the DDFS activity levels; however, additional kiosks would be needed. A contemporary check-in lobby includes a mix of remote self-service devices, bag-drop positions, and full-service agent positions, as represented on **Exhibit 4.2-5**.

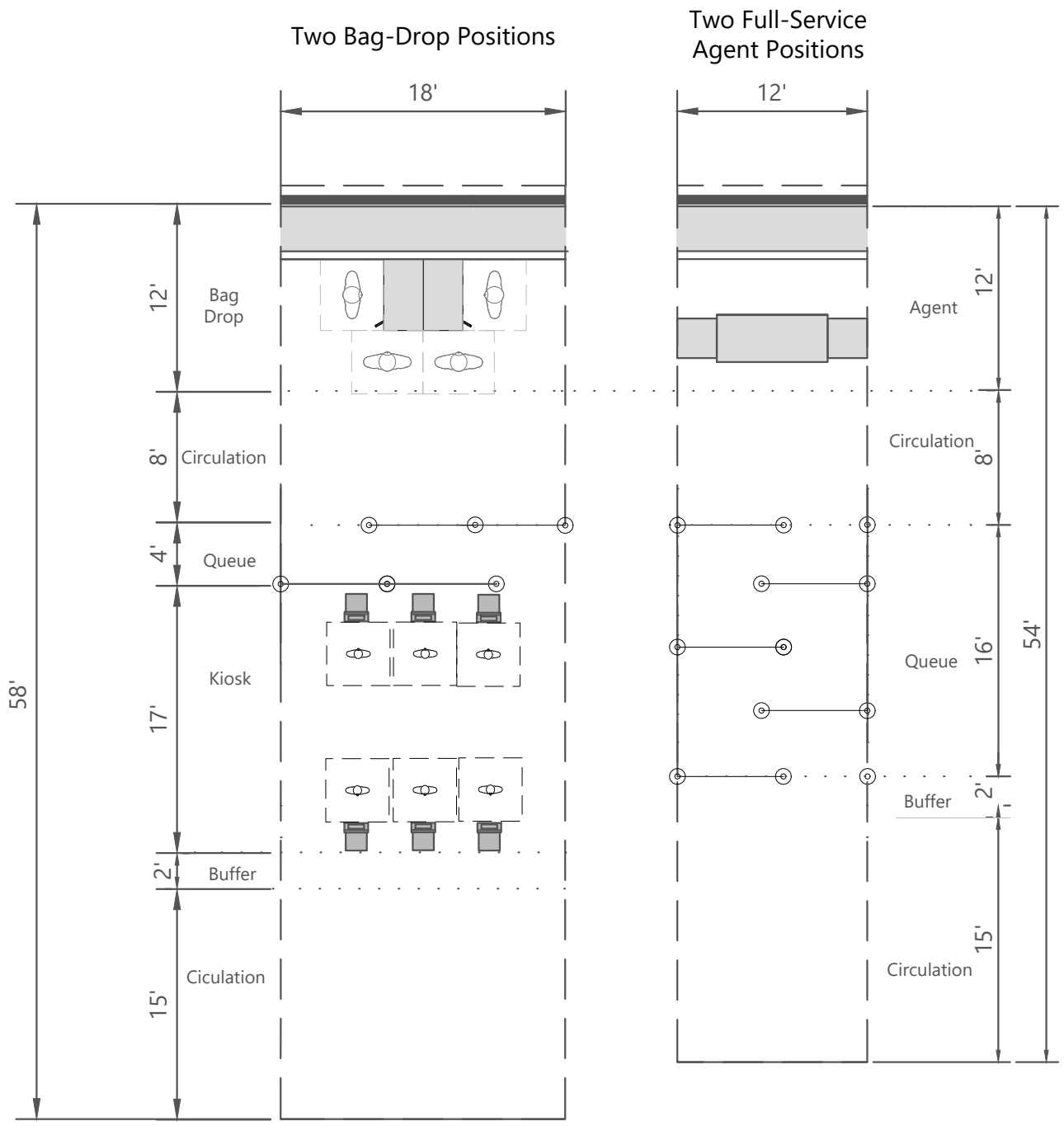
Table 4.2-11: Check-In Requirements

PASSENGER PROCESSING	UNITS	EXISTING	2015	2020	2025	2035
Peak Hour Originating Passengers 1/	passengers	N/A	382	382	404	459
Peak Hour Check-in Demand	passengers	N/A	294	294	311	353
Kiosks	positions	N/A	11	11	12	14
Agent Positions	positions	24	10	11	12	13

NOTE:

1/ At scheduled time of departure.

SOURCE: Ricondo & Associates, Inc., September 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.



SOURCE: International Air Transport Association, *Airport Development Reference Manual,* 10th ed., March 2014 (Planning Guidelines).
PREPARED BY: Ricondo & Associates, Inc., November 2015.

EXHIBIT 4.2-5

NORTH 0 □0 ft□

Check-in Template

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\205- Facility Requirements\Terminal\CAD\EYW_LobbyDepth_CheckinIATA_short.dwgLayout: EYW-325 SF Dom Queue Plotted: Jun 11, 2020, 11:02PM

4.2.3.2 Passenger Security Screening Checkpoint

Spreadsheet modeling was used to determine the number of security screening lanes needed to maintain the LOS standard for security wait times and to estimate the number of passengers waiting in queue. **Table 4.2-12** lists the peak hour demand basis and the requirements for the security screening lanes that correlate to the respective DDFS activity levels. For 2015 and 2020 DDFS, the terminal inventory of security screening lanes should provide adequate capacity to support the demand levels without providing a separate lane for Pre✓. DDFS 2025 and 2035 require an additional lane as either a Pre✓ lane or a standard lane. TSA has protocol to allow Pre✓ passengers to use a standard lane, which should be planned. **Exhibit 4.2-7** illustrates the space template, including a unit for advanced imaging technology (AIT). The template module does not include TSA corollary areas for AIT workstations, administrative space, technical support space, or common exit circulation corridors beyond the recomposure area. The TSA checkpoint corollary area requirements are based on the *Checkpoint Design Guide*[9], which recommends 150 square feet per screening lane.

Table 4.2-12: Security Screening Checkpoint Requirements

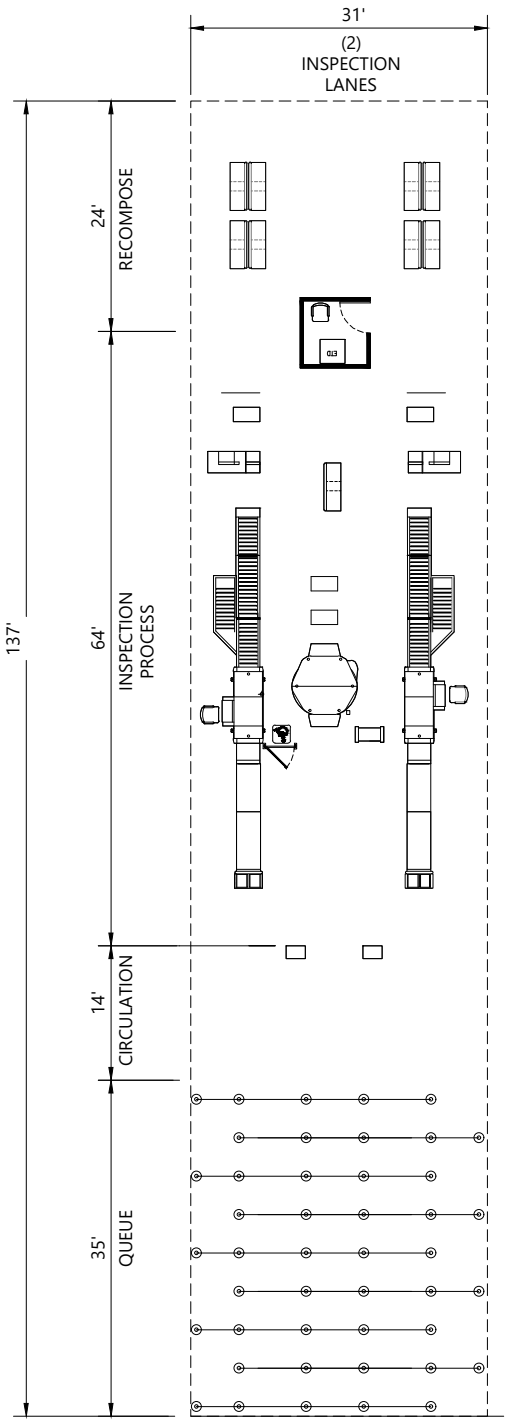
PASSENGER PROCESSING	UNITS	EXISTING	2015	2020	2025	2035
Peak Hour Originating Passengers 1/	passengers		382	382	404	459
Peak Hour Checkpoint Demand	passengers		305	305	323	367
Pre✓	lanes	0	0	0	1	1
Standard	lanes	2	2	2	2	2
Total Lanes	lanes	2	2	2	3	3

NOTE:

1/ At schedule time of departure.

SOURCE: Ricondo & Associates, Inc., September 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

9 Transportation Security Administration, *Checkpoint Design Guide (CDG), Revision 5.1*, May 2014.



SOURCE: Transportation Security Administration, *Checkpoint Design Guide (CDG), Revision 5.1*, May 2014.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

EXHIBIT 4.2-6

NORTH 0 □0 ft□

Security Screening Checkpoint Template

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\205- Facility Requirements\Terminal\CAD\EYW_TSA_SSCP.dwgLayout: EYW-SSCP Plotted: Jun 11, 2020, 11:10PM

4.2.3.3 Holdrooms

The holdroom planning criteria described in Section 4.2.2.3 was applied to every flight reflecting the peak hour for passenger demand in order to determine the aggregate holdroom area requirement. Peak 20-minute flight operations were utilized to determine the number of aircraft gate positions needed. **Table 4.2-13** lists holdroom requirements. The existing facility has sufficient total area but is lacking in seated areas to meet current demand levels. As peak hour enplaned passengers increase in the future planning horizons, this shortfall will increase to approximately 1,000 square feet of seating area. Additional queueing area will be required by 2025 as well. The space template for a narrow-body holdroom based on IATA planning guidelines is shown on **Exhibit 4.2-8**.

Table 4.2-13: Holdroom Requirements

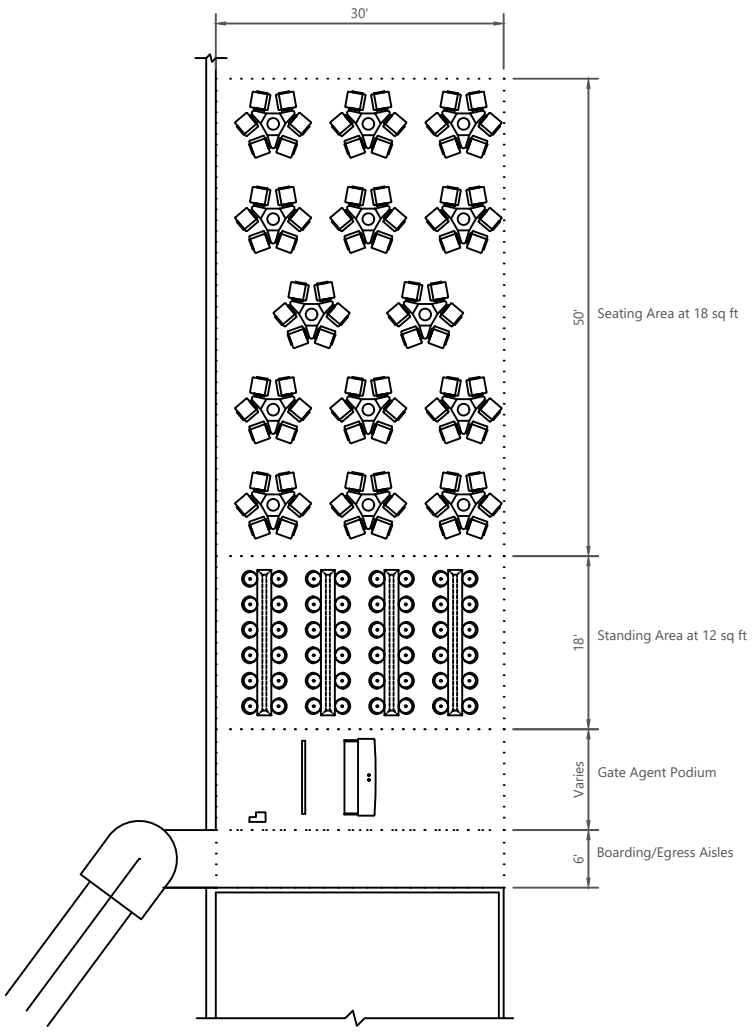
HOLDROOMS	UNITS	PLANNING FACTOR	EXISTING	2015	2020	2025	2035
Peak 20-minute Departures	flights			3	3	3	3
Agent Counter Area 1/	square feet	120	780	360	360	360	360
Agent Counter Positions	positions	2	12	6	6	6	6
Aisleway 2/	square feet	180	920	540	540	540	540
Peak Hour Enplaned Passengers	**Passengers**			**292**	**301**	**324**	**361**
Seated	square feet	18	2,820	3,154	3,251	3,499	3,899
Standing	square feet	12	1,120	701	722	778	866
Queuing	square feet	11	670	642	662	713	794
Total Area			**6,310**	**5,397**	**5,535**	**5,890**	**6,459**

NOTES:

1/ Based on 4 feet wide by 30 feet deep.

2/ Based on 6 feet wide and 30 feet deep.

SOURCE: Ricondo & Associates, Inc., September 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.



Seating Configuration

Criteria	Planning Guidelines
Boarding/Egress Aisle (sq ft)	180
Gate Agent Podium (sq ft)	120
Seating Area (sq ft)	1,490
Standing Area (sq ft)	540
Queue Area (sq ft)	0
Number of Seats (ea)	128

NOTES:
1/ Holdroom reflects sizing to accommodate passengers on a single 150 seat narrowbody aircraft.

SOURCE: International Air Transport Association, *Airport Development Reference Manual,* 10th ed., March 2014 (Planning Guidelines).
PREPARED BY: Ricondo & Associates, Inc., September 2016.

EXHIBIT 4.2-7

NORTH 0 □0 ft□

Holdroom Template

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\205- Facility Requirements\Terminal\CAD\EYW_Holdroom_Configuration.dwgLayout: FYW-holdroom Plotted: Jun 11, 2020, 10:59PM

4.2.3.4 Outbound Baggage Makeup

A spreadsheet model was used to determine the number of carts required to support the peak 10-minute flight makeup period. **Table 4.2-14** lists outbound baggage makeup requirements that correlate to the respective DDFS activity levels. The current baggage makeup area should provide adequate capacity to 2020; additional area will be needed after 2020. To provide redundancy while the primary device is undergoing maintenance, a second outbound bag makeup device is also recommended in the intermediate/long-term. The space template shown on **Exhibit 4.2-8** is based on the device currently functioning at the Airport.

Table 4.2-14: Baggage Makeup Requirements

OUTBOUND BAGGAGE MAKEUP	UNITS	EXISTING	2015	2020	2025	2035
Peak 10-minute Flights in Makeup	operations	N/A	6	7	7	8
Cart Requirement	cart	16	12	14	18	20

SOURCE: Ricondo & Associates, Inc., September 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

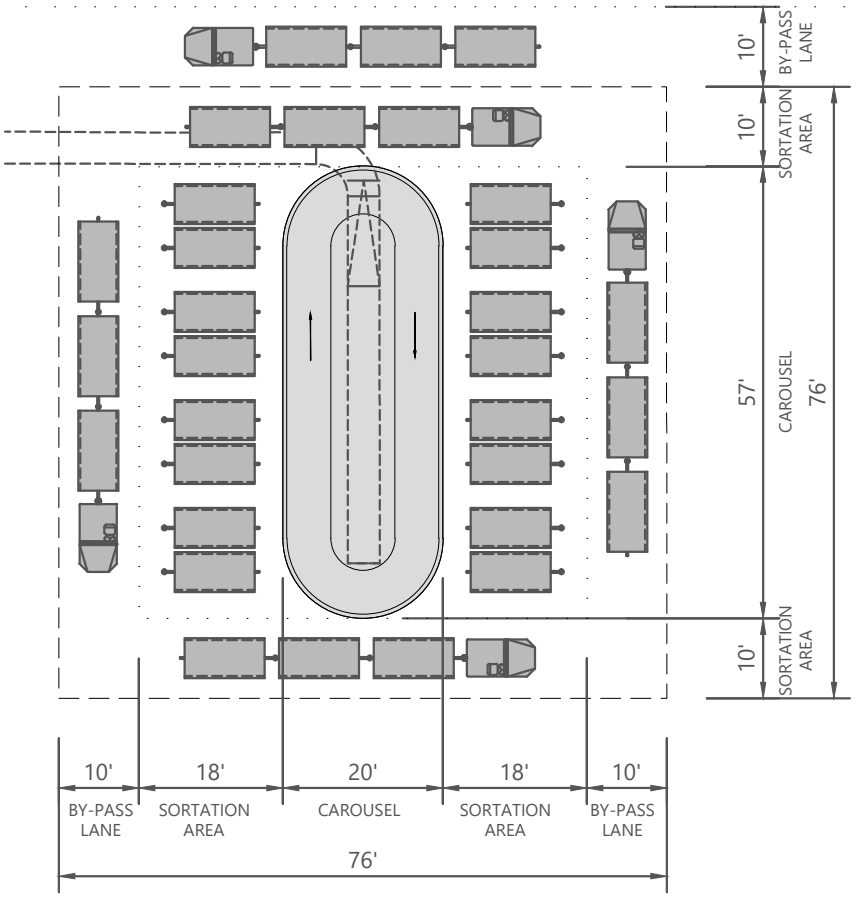
4.2.3.5 Bag Claim

A spreadsheet model was used to determine domestic baggage claim requirements based on last bag delivery occurring within 20 minutes of flight arrival. **Table 4.2-15** lists the baggage claim requirements that correlate to the respective DDFS activity levels. An additional baggage claim area will be needed. The space requirement for baggage claim is based on the devices currently functioning at the Airport, as shown on **Exhibit 4.2-9**, and the desired level of service for area per passenger.

Table 4.2-15: Baggage Claim Requirements

DOMESTIC BAGGAGE CLAIM	UNITS	EXISTING	2015	2020	2025	2035
Peak 20-minute Passengers with Bags	passengers	N/A	164	170	174	201
Peak 20-minute Operations	operations	N/A	2	2	2	2
Baggage Claim Requirement	device	2	2	2	2	2
Retrieval Area Requirement	sq ft	N/A	2,952	3,060	3,132	3,618
Total Baggage Claim Area Requirement	sq ft	3,096	4,541	4,707	4,818	5,566

SOURCE: Ricondo & Associates, Inc., September 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.



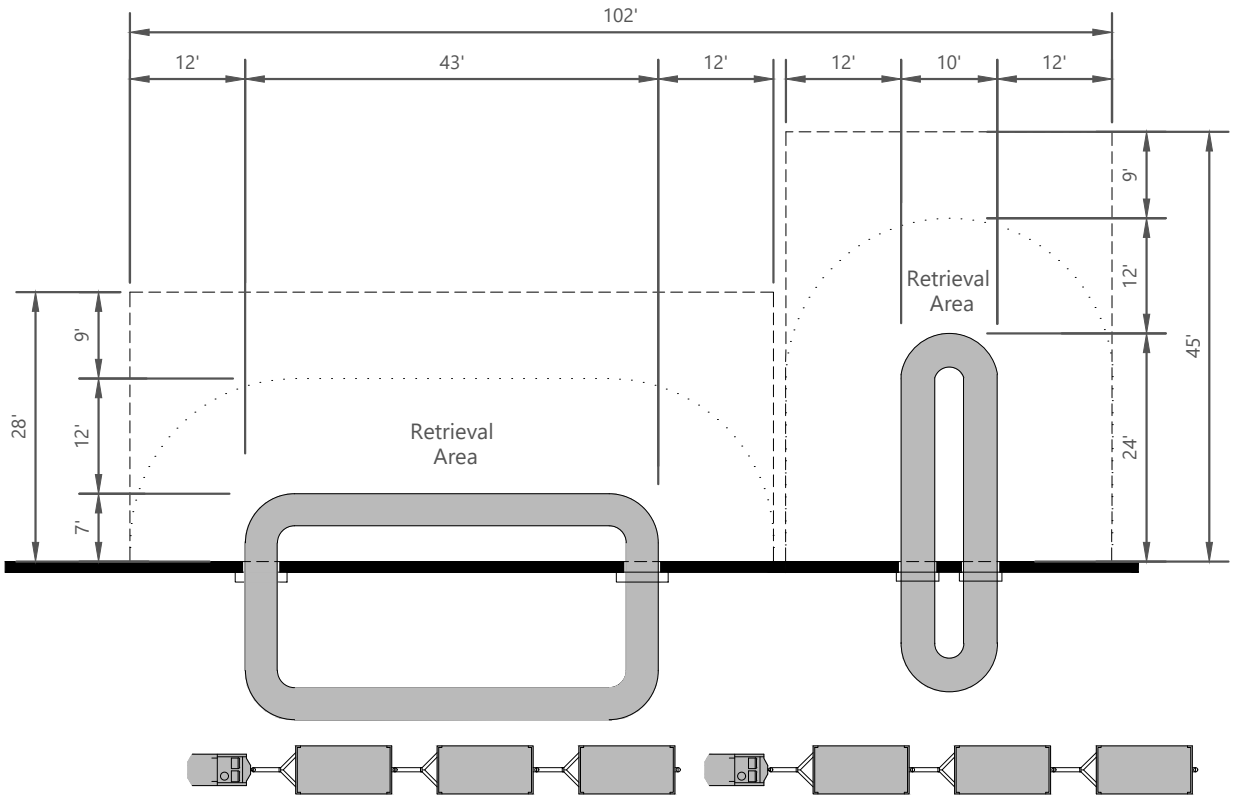
SOURCE: Ricondo & Associates, Inc., September 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

EXHIBIT 4.2-8

NORTH 0 30 ft

Baggage Make-up Template

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\205- Facility Requirements\Terminal\CAD\EYW-OutboundBaggage.dwgLayout: EYW-PERPENDICULAR Plotted: Jun 11, 2020, 11:19PM



AREA PER DEVICE:
1,500-1,800 sq ft

SOURCE: Airport Cooperative Research Program, Report 25, *Air Passenger Terminal Planning and Design*, Vol. 1, *Guidebook*, 2010 (Critical Dimensions).
PREPARED BY: Ricondo & Associates, Inc., September 2016.

EXHIBIT 4.2-9

NORTH 0 □0 ft□

Baggage Claim Template

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\205- Facility Requirements\Terminal\CAD\EYW-BagClaim.dwgLayout: EYW-Flat Plotted: Jun 11, 2020, 11:21PM

4.3 On-Airport Curbsides and Roadways

This section documents the ground access facility requirements developed as part of the Master Plan Update. Requirements were developed for the following ground access elements:

- Terminal curbsides
- On-Airport roadway links

Spreadsheet-based mathematical models were used to identify existing facility demands and future requirements for the peak-month-average-day terminal departure peak hour and the peak-month-average-day terminal arrival peak hour. Utilizing annual passenger forecasts, facility demand and requirements were developed for existing (2015) and future-year (2020, 2025, and 2035) conditions.

4.3.1 EXISTING CONDITIONS

To determine the baseline demand, data were collected by CH Perez & Associates Consulting Engineers, Inc. on August 13, 2016. The data collected included roadway traffic volumes determined in the form of intersection counts, curbside vehicle classification, and curbside dwell times. Due to the remoteness of the airport with respect to connectivity to other airport hubs, there was only one significant daily peak period at the Airport. Therefore, data were collected from 10:00 a.m. to 2:00 p.m. to determine the vehicular activity at the Airport. Since August 2016 data represent a volume lower than the 2015 design day, the August 2016 data were factored up to 2015 design day values for the remainder of the analysis. Future demand levels for terminal curbsides, Airport roadways, and the parking demand were assumed to increase from 2015 levels at rates proportional to the passenger forecasts.

4.3.1.1 Determining Peak Hours

The primary Airport roadway system and curbside facilities are planned to accommodate activity during peak hour conditions. Peak passenger activity was determined using the flight schedules, seats per plane, and typical EYW load factors.

Peak Hour

From the schedule data it was observed that there was only one daily peak period that occurred from 10:00 a.m. to 2:00 p.m. on Saturday. The peak hour occurred from 10:00 a.m. to 11:00 a.m. with 194 vehicles entering and 224 vehicles exiting the Airport area. This peak was primarily driven by the activity of the Delta Airlines who operates flights with Boeing 737 aircraft, which affects the overall number of passengers at the Airport.

4.3.1.2 Terminal Curbside

There are two curbsides at the Airport: a departing curbside and an arrival curbside. The departing curbside is 375 feet in length and is used by private vehicles, taxicabs, limos, and shuttles. The arrivals curbside is divided into three distinct areas: 184 feet for curbside taxicab and public transit bus loading, 66 feet for private vehicle loading, and 177 feet for commercial vehicle loading, as shown on **Exhibit 4.3-1**. In addition to these arrival curbside areas, there is 100 feet for taxicab staging upstream of the curbside area, but this is not included in the useable curbside area calculation as it is just taxicab storage. Curbside utilization is determined by length of the allocated curbside, the average dwell time of the curbside vehicle, and the number of vehicles using the curb. Results of the terminal curbside facility requirement analyses are discussed in Section 4.3.3.1.

4.3.1.3 Airport Roadways

All Airport traffic enters from eastbound or westbound South Roosevelt Boulevard. After entering the Airport limits, vehicles follow signage leading to the arrival or departure curbsides, parking lots, or rental car return area. **Exhibit 4.3-2** identifies the discrete roadway links traveled by vehicles to these destinations, which were modeled to determine their utilization. The airport roadway facility requirement link analyses are discussed in Section 4.3.3.2.

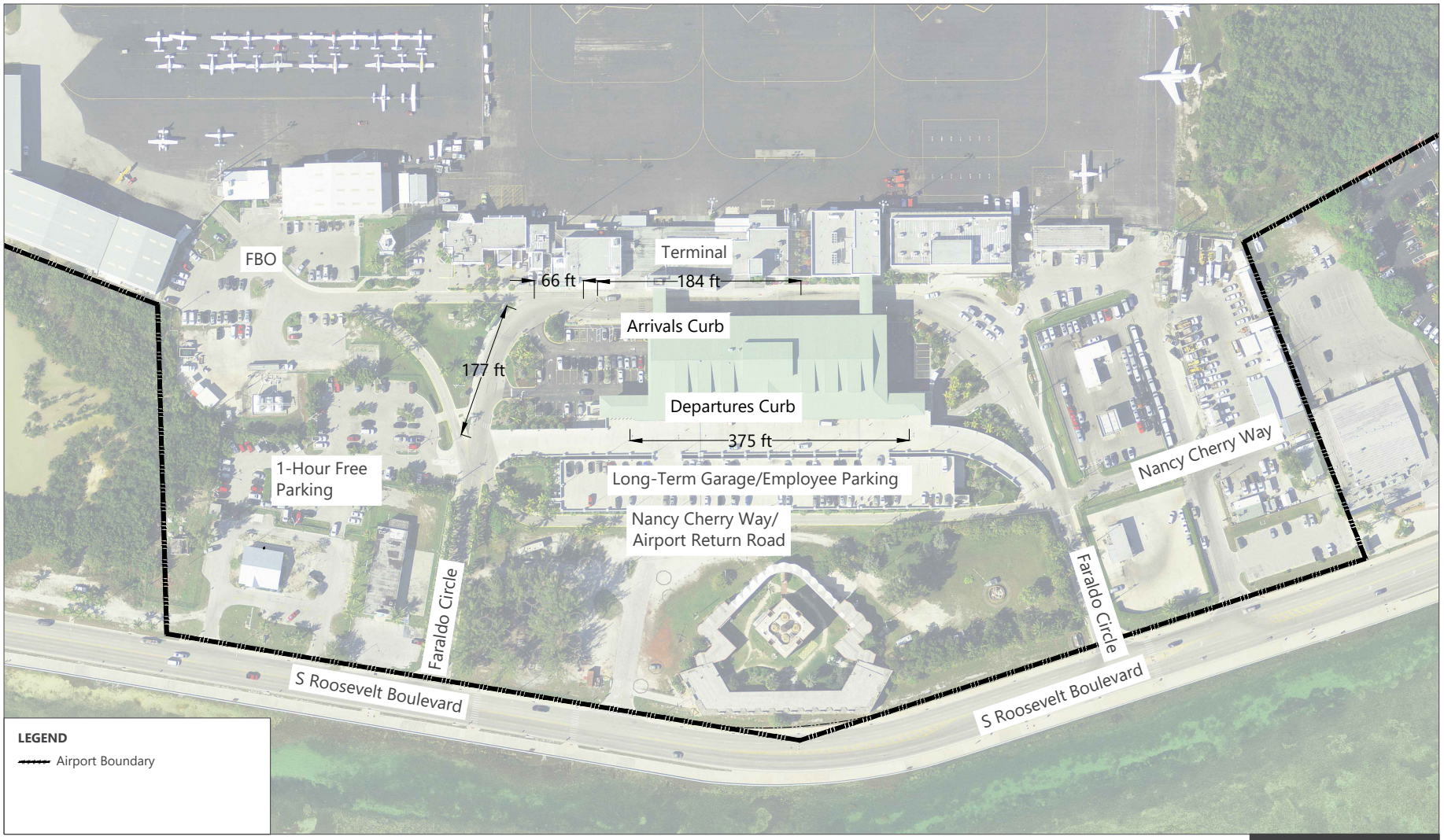
4.3.2 GROUND ACCESS ACTIVITY FORECAST

Airport-related traffic volumes for future years 2020, 2025, and 2035 were derived by increasing the 2015 Airport-related traffic volumes proportionally to the passenger forecast, which is summarized in **Table 4.3-1**. Privately operated vehicles and low-occupancy commercial vehicles (e.g., taxicabs, limousines, shared ride vehicles) were assumed to increase at a rate proportional to the passenger volumes (presented in Table 4.3-1). Higher-occupancy commercial vehicles (e.g., shuttles, buses), which are able to accommodate more passengers using larger vehicles, were assumed to increase at approximately half the rate applied to privately operated vehicles.

Table 4.3-1: Future Year Passenger Forecasts

	ANNUAL ENPLANED		PEAK HOUR ENPLANED	
YEAR	PASSENGERS	PERCENT GROWTH FROM YEAR 2015	PASSENGERS	PERCENT GROWTH FROM YEAR 2015
2015	362,802	--	355	--
2020	430,764	18.7%	398	12.1%
2025	482,844	33.1%	426	20.2%
2035	577,053	59.1%	485	36.8%

SOURCE: Ricondo & Associates, Inc., August 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.



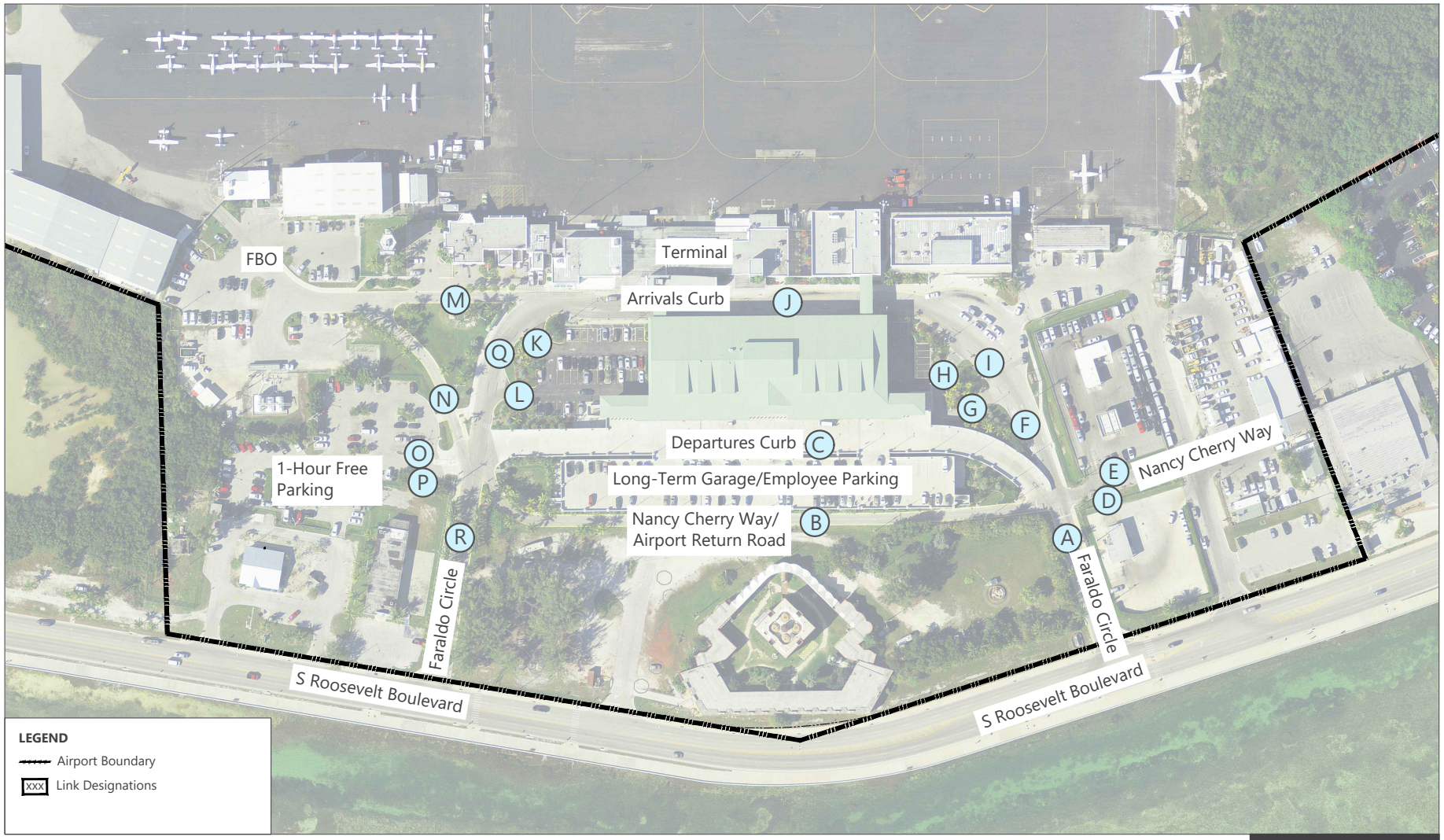
SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., October 2016.

EXHIBIT 4.3-1

NORTH 0 □00 ft

Curb Dimensions

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\205- Facility Requirements\Landside\EYW-Landside.dwgLayout: Ex_4.3-1 Plotted: Jun 11, 2020, 11:41PM



SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., November 2016.

EXHIBIT 4.3-2

NORTH 0 □00 ft

Roadway Links Designation

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\205- Facility Requirements\Landside\EYW-Landside.dwgLayout: Ex_4.3-2 Plotted: Jun 11, 2020, 11:39PM

4.3.3 GROUND ACCESS FACILITY REQUIREMENTS

4.3.3.1 Terminal Curbside

The peak hour traffic volumes from the classification data collection were used to represent the number and types of vehicles using the terminal curbsides. The traffic volumes were also utilized to estimate the linear requirements for terminal curbsides during the peak hour for curbside traffic.

Approach

A curbside demand and requirements model was developed to analyze the number of vehicles requiring curbside frontage during a busy period of the peak hour. The model incorporated data for the number and types of vehicles and average dwell times at curbside during the peak hour. To account for non-uniform arrival rates during the peak hour, a statistical surge factor, based on a Poisson distribution, was used in the model to determine the number of occupied curbside parking spaces during the peak hour.[10] Demand for curbside frontage was converted from space to linear feet by multiplying the number of occupied parking spaces during the peak hour against an average vehicle length. The average vehicle length includes empty space between two parked vehicles and lost spaces from parking inefficiencies. Overall, curbside frontage demand represents the peak accumulation of vehicles waiting at the curbside, aligned nose-to-tail in a single queue.

The existing curbside utilization factor was calculated by dividing the linear feet of curbside frontage demand by existing curbside length. The curbside utilization factor was correlated to a LOS framework to indicate the level of congestion at curbside. For example, a very low utilization factor indicates that vehicles are easily accommodated along the inner lane without the need to double-park. This utilization factor equates to an excellent LOS, or LOS A. Conversely, a very high utilization factor equates to double and triple parking along the entire curbside, restricting vehicle movements and resulting in a poor LOS (i.e., LOS F). **Table 4.3-2** correlates curbside LOS to the utilization ranges for passenger loading/unloading. LOS C is generally a desirable condition during peak activity periods at major airports for most days of the year. LOS D conditions may be acceptable during peak seasonal periods. LOS D or better along the curbsides is considered acceptable, while LOS E and F are considered unacceptable.

[10] In probability theory and statistics, the Poisson distribution is a discrete probability distribution that expresses the probability of a given number of events occurring in a fixed interval of time and/or space if these events occur with a known average rate and independently of the time since the last event.

Table 4.3-2: Curbside Level of Service and Utilization Ranges

LEVEL OF SERVICE	SINGLE-LANE LOADING UTILIZATION (ARRIVALS)	MULTIPLE-LANE LOADING UTILIZATION (DEPARTURES)	DESCRIPTION
A	0% – 70%	0% – 90%	Excellent: Drivers experience no interference from pedestrians or other motorists.
B	71% – 85%	91% – 110%	Very Good: Relatively free-flow conditions with limited double parking.
C	86% – 100%	111% – 130%	Good: Double parking near terminal entrance doors is common with some intermittent triple parking.
D	101% – 115%	131% – 170%	Fair: Vehicle maneuverability restricted due to frequent double/triple parking.
E	116% – 130%	171% – 200%	Poor: Significant delays and queues; double/triple parking throughout curbside.
F	> 131%	> 201%	Failure: Motorists unable to access/depart curbside; significant queuing along entry road.

SOURCE: Ricondo & Associates, Inc., September 2016 (based on information published in Airport Cooperative Research Program, Report 40, *Airport Curbside and Terminal Area Roadway Operations*, July 2010).
PREPARED BY: Ricondo & Associates, Inc., September 2016.

Curbsides serving commercial vehicles and private vehicle loading of arrivals passengers were analyzed assuming passenger loading/unloading only occur in the lane directly adjacent to the curbside (i.e., single-lane loading).

It was assumed that all vehicles unloading on the departures level could occur in the lane directly adjacent to the curbside and with an allowance for additional vehicle unloading in the second lane (i.e., multiple-lane loading). Curbsides with multiple-lane loading are not considered to be operating at a poor LOS when all available curbside length is used (100 percent utilization). In other words, even when a single lane is fully utilized, parked vehicles are still able to access and depart the curbside, because they are not blocked by vehicles in the second parking lane. Conversely, double or triple parking or queuing along 100 percent of both the loading lane and the adjacent travel lane constitutes a failed LOS (i.e., greater than 200 percent utilization, LOS F).

Results

Airport-related traffic volumes for future years 2020, 2025, and 2035 were derived by increasing the 2015 Airport-related traffic volumes proportionally to the peak hour passenger forecast. The results of the future year (2020, 2025, and 2035) terminal curbside analysis are presented in **Table 4.3-3**. For comparison purposes, curbside requirements correlating to LOS C and LOS D were calculated. Both the departure level and arrivals level commercial vehicles curbside areas operate with a surplus capacity for LOS C conditions through design year 2035. The arrivals level private vehicle curbside is too short for either LOS C or LOS D conditions in all design year conditions

Table 4.3-3: Curbside Requirements Summary

	PEAK HOUR			
	2015	2020	2025	2035
Departure Level				
Demand	300	325	325	375
Capacity	375	375	375	375
Required Curbside Length				
LOS C	231	250	250	288
LOS D	176	191	191	221
Surplus/(Deficit)				
LOS C	144	125	125	87
LOS D	199	184	184	154
Arrival Level Private Vehicles				
Demand	125	125	125	150
Capacity	66	66	66	66
Required Curbside Length				
LOS C	125	125	125	150
LOS D	109	109	109	130
Surplus/(Deficit)				
LOS C	(59)	(59)	(59)	(84)
LOS D	(43)	(43)	(43)	(64)
Arrival Level Commercial Vehicles				
Demand	230	295	295	325
Capacity	361	361	361	361
Required Curbside Length				
LOS C	230	295	295	325
LOS D	200	257	257	283
Surplus/(Deficit)				
LOS C	131	66	66	36
LOS D	161	104	104	78

NOTES:

LOS – Level of Service

LOS C – Good Level of Service

LOS D – Fair Level of Service

SOURCE: Ricondo & Associates, Inc., August 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

4.3.3.2 Airport Roadways

A spreadsheet model was used to analyze the Airport roadway system and the components that are used by various Airport ground transportation modes to access key Airport destinations, such as the Airport entry/exit,

curbsides, parking facilities, and rental car facilities. The Airport roadway system and associated components included in the analysis are depicted on Exhibit 4.3-2.

Approach

Peak hour traffic volumes, which were discussed in Section 4.3.1.1, were compared to the individual roadway segment capacities to determine the Airport roadway system requirements. The capacity of a roadway segment is determined by its characteristics, including free-flow speed and the number of travel lanes. **Table 4.3-4** correlates the maximum free-flow speeds for typical Airport roadway components to the maximum sustainable flow rates under different LOS standards. The maximum flow rates were used to assess the number of lanes that are needed to accommodate anticipated traffic volumes along a roadway segment. Similar to the terminal curbside LOS framework, LOS refers to the operating performance of a roadway, measured quantitatively and reported on a scale of A to F. LOS A represents the optimal operating condition, characterized by uninterrupted free-flow operations. Conversely, LOS F represents the worst operating condition, characterized by severe roadway congestion and delay. LOS C is generally considered to be a desirable operating condition for the design of new facilities; however, LOS D conditions may be acceptable at some seasonal destination airports during peak periods of the typical busy day of the peak season (such as the design day analyzed for this study). For this analysis, future peak hour conditions experiencing LOS D or better were considered acceptable; and new roadway capacity should be constructed prior to roadways reaching LOS E (unacceptable).

Table 4.3-4: Roadway Levels of Service and Maximum Flow Rates

		MAXIMUM FLOW RATES (VEHICLES/HOUR/LANE) AT INDICATED LEVELS OF SERVICE 1/				
TYPICAL ROADWAY CLASSIFICATIONS 2/	**MAXIMUM FREE-FLOW SPEED (MPH) 2/**	**A**	**B**	**C**	**D**	**E**
Entry/Exit Roadway	50	440	730	1,050	1,380	1,620
	45	400	650	940	1,250	1,530
Terminal Loop Roadway	40	360	600	860	1,130	1,410
	35	330	540	790	1,030	1,290
Terminal Access Roadway	30	310	480	700	930	1,170
	25	250	400	600	800	1,010
Ramps (25 MPH or less)	15	250	400	600	800	1,010

NOTES:

MPH = Miles per Hour

Level of Service: A – Excellent, B – Very Good, C – Good, D – Fair, E – Poor, F – Failure

1/ Flow rates were adjusted to account for heavy vehicles and the effects of unfamiliar drivers.

2/ The roadway classifications and associated speeds represent typical ranges that vary by airport.

SOURCE: Ricondo & Associates, Inc., September 2016 (based on information presented in [a] National Research Council, Transportation Research Board, *Highway Capacity Manual*, Exhibit 21-2, "LOS Criteria for Multilane Highways," December 2000; and [b] Airport Cooperative Research Program, Report 40, *Airport Curbside and Terminal Area Roadway Operations*, Table 4-1, "Levels of Service for Airport Terminal Area Access and Circulation Roadways," July 2010).

PREPARED BY: Ricondo & Associates, Inc., September 2016.

Results

On-Airport traffic volumes for future years 2020, 2025, and 2035 were derived by increasing the August 2016 data on peak hour traffic and then increasing the data proportionally to the peak hour passenger forecast that is summarized in Table 4.3-1. The results of the on-Airport traffic volumes are presented in **Table 4.3-5**, with the corresponding links found in Exhibit 4.3-2. All roadway links at the Airport operate at LOS B or better through the planning horizon.

Table 4.3-5: On-Airport Roadway Demand/Capacity Results

			2015		2020		2025		2035	
DESIGNATION	LOCATION	NUMBER OF LANES	VOLUME	LOS	VOLUME	LOS	VOLUME	LOS	VOLUME	LOS
A	Entrance to Airport Faraldo Circle	2	323	A	362	A	388	A	442	A
B	Nancy Cherry Way/Airport Return Road	1	120	A	135	A	144	A	164	A
C	Departure Roadway	1	115	A	129	A	138	A	157	A
D	EB Nancy Cherry Way	1	60	A	67	A	72	A	82	A
E	WB Nancy Cherry Way	1	19	A	22	A	23	A	27	A
F	Faraldo Circle after Turn off to Departure Roadway Before Garage Entrance	1	288	B	323	B	346	B	393	B
G	Long-Term Garage Entrance	1	4	A	4	A	4	A	5	A
H	Long-Term Garage Exit	1	9	A	10	A	11	A	12	A
I	Faraldo Circle between Garage Entrance and Exit	2	284	A	319	A	341	A	389	A
J	Arrivals Roadway	1	282	B	317	B	339	B	386	B
K	Rental Car Entrance	1	85	A	95	A	102	A	116	A
L	Rental Car Exit	1	201	A	226	A	242	A	275	B
M	FBO Entrance	1	12	A	14	A	15	A	17	A
N	FBO Exit	1	30	A	34	A	36	A	41	A
O	1-Hour Surface Lot Entrance	1	67	A	75	A	81	A	92	A
P	1-Hour Surface Lot Exit	1	12	A	14	A	15	A	17	A
Q	Faraldo Circle between RAC Entrance and Exit	1	185	A	208	A	223	A	253	B
R	Exit Airport Faraldo Circle	2	357	A	400	A	428	A	488	A

NOTES:

LOS – Level of Service

LOS A – Excellent

LOS B – Very Good

EB – East Bound, WB – West Bound

FBO – Fixed-base Operator

SOURCES: CH Perez & Associates Consulting Engineers, Inc., August 2016; Ricondo & Associates, Inc., August, 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

4.4 Pubic Parking

This section documents the public parking facility requirements developed as part of the Master Plan Update.

4.4.1 EXISTING CONDITIONS

To determine the baseline demand, parking data were collected based on on-site parking capacity observations and Airport staff observations on August 13, 2016. Future levels for parking demand were assumed to increase from 2015 levels at rates proportional to the passenger forecast.

There are three parking options operated on-site at the Airport. Additional overflow parking can be accommodated in the picnic area and parking near Fort East Martello Museum. The results of the staging lot analyses are discussed in this section.

4.4.2 METHODOLOGY AND ASSUMPTIONS

The Airport operates three parking facilities:

- Free 30-minute parking consists of three private vehicle spaces and five ADA accessible vehicle spaces directly across from the baggage claim curbside. Parking availability is on a first come, first served basis.
- There are 147 long-term spaces on the lower level of the garage under the departures curbside. These are paid parking spaces at an hourly rate up to $10/day. In the long-term garage area, 20 of these spaces are chained off for use, and occupied by airport maintenance equipment. The current 127 space capacity garage can reach 100 percent utilization during peak periods of the day during the peak period of the year.
- 1-hour free parking consists of 58 spaces located west of the terminal area. There is no controlled access to this lot, but the Airport staff approximates peak usage during the peak day is approximately 70 percent.

Existing public parking demand is typically determined using actual daily occupancy data from a parking access and revenue control system; however, due to the size of the Airport, the demand was determined by a site visit and feedback from airport staff. Since the long-term garage was completely full on the August data collection day, the estimated demand was the full garage capacity of 127 spaces, it is assumed the 1-hour surface lot was used to accommodate overflow demand of the long-term garage parking. The resulting requirements used for this study are depicted in **Table 4.4-1**. This peak daily occupancy was proportionally increased using the forecast to determine the future demands for the years 2020, 2025, and 2035.

Table 4.4-1: Public Parking Requirements

	CAPACITY	ESTIMATED OCCUPANCY RATE	ESTIMATED DEMAND	SERVICE FACTOR	REQUIREMENT
Long-Term Garage	147	86%	127	0%	127
1-Hour Surface Lot	58	69%	40	0%	40
Total	**205**		**167**		**167**

SOURCES: Key West International Airport, August 2016; Ricondo & Associates, Inc., August 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

4.4.3 FORECAST PUBLIC PARKING REQUIREMENT

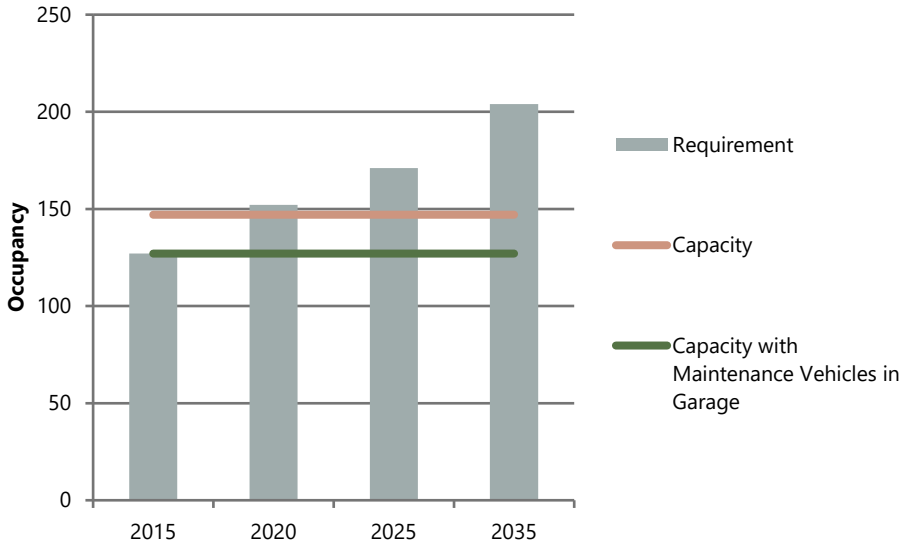
The public parking requirements consist of the minimum number of spaces needed to accommodate a parking demand. Typically, an additional buffer is applied, such that a patron is not searching for a last available space. However, due to the small size of the garage, no buffer was needed as all parking spaces can be checked for availability during one lap of the long-term garage. Thus, the demand for spaces can equal the requirement for spaces. The 2015 parking requirement was increased based on the total enplaned passengers (summarized in Table 4.3-1). The parking requirements are summarized in **Table 4.4-2**. **Exhibit 4.4-1** and **Exhibit 4.4-2** illustrate how the parking products compare to the capacity. Requirements were compared to available capacity in order to identify surpluses and deficiencies. The overall deficiency is expected to be 63 spaces by 2035, assuming the 20 maintenance spaces are converted back to public parking.

Table 4.4-2: Public Parking Requirements Compared to Existing Capacity

		2015	2020	2025	2035
Long-Term Garage	Requirement	127	152	171	204
	Surplus/(Deficit)	20	(5)	(24)	(57)
1-Hour Surface Lot	Requirement	40	48	54	64
	Surplus/(Deficit)	18	10	4	(6)
Total	**Requirement**	**167**	**200**	**225**	**268**
	Surplus/(Deficit)	**38**	**5**	**(20)**	**(63)**

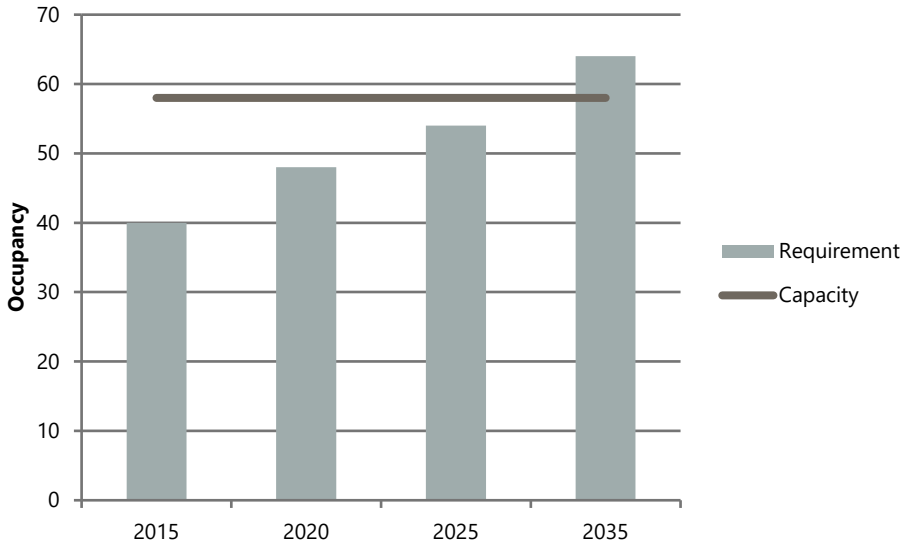
SOURCES: Key West International Airport, August 2016; Ricondo & Associates, Inc., August 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

Exhibit 4.4-1: Long-Term Garage Requirements Compared to Existing Capacity



SOURCES: Key West International Airport, August 2016; Ricondo & Associates, Inc., August 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

Exhibit 4.4-2: 1-Hour Surface Lot Requirements Compared to Existing Capacity



SOURCES: Key West International Airport, August 2016; Ricondo & Associates, Inc., August 2016.
PREPARED BY: Ricondo & Associates, Inc., September 2016.

4.5 Rental Car Facilities

The rental car facilities at the Airport include counter areas in the arrivals terminal, a pick-up/return area on the ground floor of the parking garage, and rental car maintenance areas located at multiple locations.

To accommodate ready/return, rental car storage, and maintenance functions in a single location at the Airport, the Monroe County will pursue the development of consolidated rental car facility. The space program for this facility including customer service area, ready/return, and vehicle storage area requirements will be established as part of a standalone study.

4.6 Air Cargo

Air cargo facilities are economic drivers for airports of all types. When strategically developed and managed, their benefits can be exponential. High-value, time-sensitive commodities must be reliably and expeditiously moved throughout the aviation system.

Airports are an integral part of the transportation infrastructure; they accommodate international, national, regional, and local trade. Consequently, air cargo facilities must be responsive and flexible to the changes in these markets. They must also be optimally located, when feasible, and accessible both on and off the airport.

This Master Plan has examined EYW's existing and forecast air cargo demand and the capacity for its existing facilities, as well as identified facility requirements utilizing industry standards. The following sections provide a description of air cargo operations at EYW.

4.6.1 DESCRIPTION OF AIR CARGO OPERATIONS

The R&A Planning Team conducted interviews with the air cargo Operations Managers for FedEx and UPS at EYW in the spring and fall seasons of 2016. The purpose of these interviews was to gain insight into the potential changes in cargo activity or operations at EYW, to obtain detailed cargo operations and volumes for 2005 to 2015 for both all-cargo and belly cargo, and to identify the level of growth the cargo airlines anticipate in relation to travel to Cuba. The cargo operators were also encouraged to offer any additional input regarding their operations. **Exhibit 4.5-1** shows the locations of the FedEx and UPS air cargo facilities at EYW.

Currently, there are two air cargo operators at EYW: FedEx and UPS. To supplement their delivery systems, FedEx subcontracts Mountain Air Cargo (Mountain Air) to fly its cargo, and UPS subcontracts Martinaire Aviation (Martinaire) to fly its cargo. UPS and FedEx are both certificated airlines and are described as integrated freight carriers, because they transport freight from door-to-door using their own fleet of trucks and aircraft.

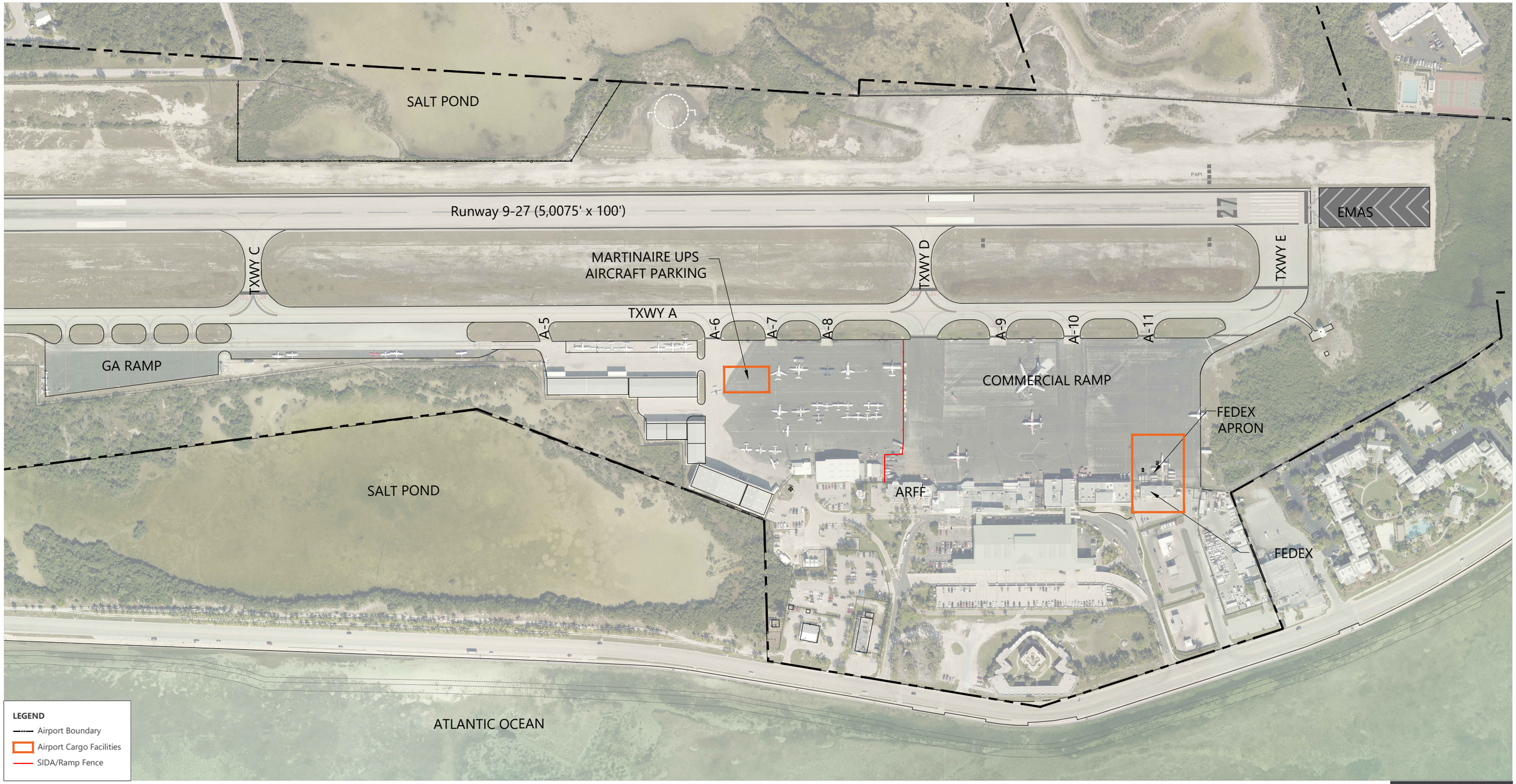


EXHIBIT 4.5-1

NORTH 0 300 ft

Airport Cargo Facilities

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\205- Facility Requirements\GA\Exhibit 4.5-1 Airport Cargo Facilities.dwgLayout: 11x17L Plotted: Jun 11, 2020, 05:26PM

In addition, EYW has commercial service airlines that transport cargo along with passenger luggage in the bellies of aircraft. As indicated in the aviation forecasts presented in Section 2 of this Master Plan, this type of cargo constituted less than 0.3 percent of total cargo volumes at EYW in 2015.[11]

4.6.1.1 Martinaire Aviation

Martinaire is a subcontractor of UPS. Martinaire's staff at EYW consists only of pilots, and the Cessna Caravan CE 208B comprises its fleet, which is shown on **Exhibit 4.5-2**. The Cessna Caravan CE 208B is a single-engine, turboprop aircraft configured for air cargo; it has a useful load of 3,000 pounds, which includes the pilot, cargo, and fuel. Only one of these aircraft is parked on the apron during the day.

Martinaire flies roundtrip to Miami International Airport (MIA) for UPS. Outbound cargo is flown between 7:30 p.m. and 8:00 p.m., Monday through Friday. Inbound cargo from MIA arrives between 8:00 a.m. and 8:30 a.m. Tuesday through Saturday. One to two UPS trucks enter EYW through Gate 5, which is shown on **Exhibit 4.5-3**, and UPS staff are responsible for loading and unloading the air cargo.

Exhibit 4.5-2: Martinaire Cessna 208 Cargo Aircraft



SOURCE: American Infrastructure Development, Inc., 2016.
PREPARED BY: American Infrastructure Development, Inc., 2016.

Exhibit 4.5-3: UPS Air Cargo Trucks at Gate 5



PREPARED BY: American Infrastructure Development, Inc., 2016.

[11] U.S. Department of Transportation, T-100, July 2016.

4.6.1.2 FedEx

FedEx handles air cargo operations at EYW, as well as at Florida Keys Marathon International Airport (MTH). MTH is a general aviation airport approximately 50 miles northeast. MTH and EYW have a shared function, since the FedEx trucks originating out of Fort Lauderdale-Hollywood International Airport (FLL) make stops at MTH to load and unload their cargo before proceeding to EYW. They also stop at MTH to load and unload cargo before continuing to FLL.

All employees based at the facility are FedEx employees and the pilots are Mountain Air employees. FedEx owns the aircraft, but aircraft are flown by Mountain Air pilots. The aircraft flown by Mountain Air are painted in the FedEx livery. Mountain Air pilots fly the aircraft roundtrip to FLL. All 14 employees housed at the facility are FedEx employees. Mountain Air flies the Cessna 208 Caravan, as shown on **Exhibit 4.5-4**, which has a maximum capacity of 2,400 pounds. The peak period for operations runs approximately 3 to 4 weeks prior to Christmas day, at which time all the aircraft are at capacity. Some typical items include clothing, food, medical supplies and equipment, jet parts, gemstones, and legal documents. The maximum single-cargo weight this facility can accommodate is 150 pounds. The cargo weighing more than 150 pounds is shipped by another FedEx division.

Exhibit 4.5-4: FedEx's Cessna 208 Air Cargo Aircraft



SOURCE: American Infrastructure Development, Inc., 2016.
PREPARED BY: American Infrastructure Development, Inc., 2016.

FedEx does not coordinate with Customs and Border Patrol at EYW. This occurs only at its larger hubs, such as at Memphis International Airport. However, the TSA does conduct random inspections.

Mountain Air's routine flight schedule to FLL consists of two arrivals in the morning between 9:00 a.m. and 9:30 a.m. The inbound cargo is unloaded onto FedEx trucks or vans, and the aircraft is reloaded with the outbound cargo destined for departure to FLL between 10:00 a.m. and 10:30 a.m. as shown on **Exhibit 4.5-5** and **Exhibit 4.5-6**. A second aircraft is staged on the apron during the day and is loaded with cargo for an evening departure at approximately 7:00 p.m.

Exhibit 4.5-5: FedEx Staging Trucks on Apron



SOURCE: American Infrastructure Development, Inc., 2016.
PREPARED BY: American Infrastructure Development, Inc., 2016.

Exhibit 4.5-6: FedEx Staging Trucks on Apron to Unload Cargo



SOURCE: American Infrastructure Development, Inc., 2016.
PREPARED BY: American Infrastructure Development, Inc., 2016.

Mobile roller beds are used to load and unload cargo on the apron, as shown on **Exhibit 4.5-7**. The warehouse building FedEx leases from EYW is used to hold packages for pickup and to sort outbound cargo utilizing tables and bins. Conveyor belts are not utilized. The vehicular fleet consists of 10 trucks and vans that are stored at EYW. During daylight operations, FedEx trucks and vans use Gate 1 on the eastside of EYW, as shown on **Exhibit 4.5-8**. During night operations, they are required to use a single point of entry at Gate 3 to the SIDA, as shown on **Exhibit 4.5-9**, which must be accessed from the west side of EYW via the AOA Gate 5.

Exhibit 4.5-7: Mobile Roller Beds and Hand Trolleys



SOURCE: American Infrastructure Development, Inc., 2016.
PREPARED BY: American Infrastructure Development, Inc., 2016.

Exhibit 4.5-8: FedEx Trucks Use Gate 1



SOURCE: American Infrastructure Development, Inc., 2016.
PREPARED BY: American Infrastructure Development, Inc., 2016.

Exhibit 4.5-9: Security Identification Display Area Gate 3



SOURCE: American Infrastructure Development, Inc., 2016.
PREPARED BY: American Infrastructure Development, Inc., 2016.

4.6.1.3 Potential Market Impacts

FedEx's Operations Manager at EYW anticipates that MIA will handle all inbound and outbound cargo for Cuba, because it is the Latin American base for FedEx. Martinaire did not respond to this question. However, both Martinaire and FedEx indicated that they anticipated increased growth in cargo due to the increasing popularity of ecommerce.

4.6.1.4 FedEx Cargo Volumes

The following cargo volume information was provided by FedEx during the Spring 2016 interview. FedEx staff stated that they handle approximately 872,000 pounds of cargo annually. They indicated that this equates to approximately 4,000 pounds per day. They further indicated that much of the daily volume is the result of the three military installations.

4.6.1.5 UPS Cargo Volumes

The following cargo volume information was provided by Martinaire staff during the Spring 2016 interview. Martinaire staff indicated that UPS's inbound cargo volume from MIA was 581,716 pounds in 2014. In 2015, they had experienced an increase to 606,436 pounds. The outbound volume between EYW and MIA in 2014 was 64,052 pounds. They did, however, experience a decrease in outbound cargo to 58,540 pounds in 2015. Martinaire staff indicated that they anticipate another increase in volumes for 2016.

4.6.1.6 Air Cargo Facilities Space Utilization

Table 4.5-1 summarizes the two cargo operators' facilities at EYW, which is based on the information obtained during the interviews and a review of lease documents. It presents a breakdown of the functional areas and dimensions for Martinaire and FedEx. The data show that Martinaire has no dedicated building space at EYW,

because its operations occur on Signature Flight Support's apron. It should be noted that both air cargo operators stated that they did not need additional space.

Table 4.5-1: Facility Utilization Summary

OPERATOR	WAREHOUSE (SORTING)	APRON	EMPLOYEES	TRUCK/ VEHICLE AREA	AIRCRAFT	TRUCKS/VANS
FedEx	2,973 sq ft 2/	8,842 sq ft 2/	14	9,535 sq ft 2/	2–4	10
Martinaire/UPS	N/A	2,400 sq ft 1/	1 (pilot)	N/A	1	0

NOTES:

N/A – Not Applicable

1/ Based on information provided by Martinaire and Mountain Air staff.

2/ Based on Lease

SOURCE: Martinaire/UPS and FedEx staff
PREPARED BY: American Infrastructure Development, Inc.

4.6.1.7 Processing Times

FedEx has indicated that it takes approximately 1 hour to unload and load trucks, sort FedEx mail and cargo, and load and unload aircraft. UPS's cargo operator, Martinaire, has indicated that it takes UPS's staff approximately 30 minutes to load and unload aircraft.

Since the last update of the Master Plan in 2003, FedEx has been the sole air cargo operator with a facility on EYW. FedEx's Cargo Manager stated that the building was constructed in the early 1990s. UPS loads and unloads the aircraft, while the cargo operator, Martinaire, only provides pilots to transport the cargo. To facilitate this process, Martinaire subleases one aircraft parking position for the Cessna 208 Caravan on Signature Flight Support's apron.

UPS's cargo operator, Martinaire, has indicated that the current operation is satisfactory and profitable, and the operator does not anticipate the need for a cargo building at EYW. Martinaire also has the ability to park up to two aircraft on Signature Flight Support's apron, if needed. Since UPS only needs access to Signature's apron to load and unload air cargo, the remainder of Section 4 will focus on FedEx's air cargo operation.

4.6.2 DEMAND CAPACITY ASSESSMENT

The projected air cargo volumes on Table 2-21 entitled "All Cargo Volumes and All-Cargo Operations" in this Master Plan's forecast section showed a CAGR of 2.7 percent from 2015 to 2035. On the same Table 2-21, "All Cargo Aircraft Operations" column showed the same CAGR 2.7 percent. "Historic Aircraft Operations" on Table 2-10 of the Master Plan forecasts showed a CAGR of 2.8 percent from 2012 to 2015.

4.6.3 FACILITY REQUIREMENTS

The capacity of existing cargo processing facilities at EYW was also assessed. This assessment included future requirements for buildings, aircraft parking aprons, and ground access facilities. It has been determined that expanded air cargo facilities are not needed when applying air cargo standards based on the cargo volumes received from FedEx and UPS. In the event the assessment of facility requirements determined additional air cargo space is needed, on-Airport options were examined. One site considered was the vacant Airport property on the north side of the Runway 9 approach end. However, this land has several site constraints related to airport design setback requirements; consequently, there isn't adequate land to develop this site as a cargo facility. The following is an explanation of the planning standards that were used to make this determination.

4.6.3.1 Air Cargo Facilities Planning Standards

The *Air Cargo Guide* is one of many commonly used air cargo facility planning tools in the industry.[12] This document has been updated over the years by a consortium of airport and cargo planning experts. In the preamble of this guide, the following general observations, suggestions, and data needs are discussed as starting points for assessing air cargo needs at airports of all sizes:

- Airports are dynamic businesses, and competing forces may result in demand for additional land, which in many cases is a scarce commodity for many airports;
- Techniques must be identified and implemented to foster better utilization of the existing airport land;
- Information on current conditions is needed to identify operational and capacity management issues related to air cargo facilities' development;
- Market assessments are key to identifying geographic market size and growth potential;
- Market surveys of the target markets generate important data;
- Determining the flow of goods in the operating market (what, who, how, and when are commodities transported in the market); and
- What is needed to expand or retain air cargo.

4.6.3.2 Air Cargo Building Standards

In the "Air Cargo Facility Analysis" chapter of the *Air Cargo Guide*, it is explained that there is considerable variability in utilization rates for air cargo. These rates are measured by cargo tonnage. It is suggested that for smaller airports, the average utilization rate is approximately 0.5 tons (1,000 pounds) per square feet. For large airports, the utilization rate exceeds 1.0 ton per square feet. Since UPS does not have a cargo building at EYW, the utilization rate was applied to FedEx's building lease area of 2,973 square feet.[13] With this utilization rate, FedEx can handle approximately 1,500.0 tons of cargo, which is adequate to meet the forecast demand of 828 tons by 2035. FedEx stated that it processed 872,000 pounds (436.0 tons) of cargo in 2015.

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12 Airports Council International – North America, *Air Cargo Guide*, December 2013.

13 FedEx also uses a portion of its 8,842 square feet leased apron to process air cargo, since it doesn't use a conveyor system at EYW.

4.6.3.3 Aircraft Parking Standards

FedEx leases 8,842 square feet of apron for aircraft parking, cargo staging, and for the unloading and loading of trucks and aircraft. During off-peak times, FedEx has two aircraft on the apron. The parking envelop for the two Cessna 208 Caravans is approximately 7,000 square feet, including wingtip clearance. During the Fall 2016 interview, FedEx stated that its apron space was adequate.

4.6.3.4 Recommendations

EYW is a commercial-service airport consisting of 334 acres of land; consequently, land is a finite resource. Off-Airport expansion is extremely limited given its proximity to the Atlantic Ocean, abutting land uses, historic properties, and protected preservation areas. Given these conditions, there is limited opportunity on the landside and the airside for air cargo expansion. Despite these constraints, it has been determined that both cargo handlers at EYW have devised very efficient operations that are responding to the current Key West market. In fact, based on the demand/capacity and facilities requirements assessment, the on-Airport air cargo facilities have adequate capacity.

It is suggested that EYW continue to monitor air cargo activity, keep an ongoing dialogue with the current air cargo operators, coordinate with the Chamber of Commerce, and consider developing an Airport-wide strategic business plan and economic impact study that will assist the stakeholders in developing an air cargo development program. Due to EYW's limited land area, future projects will be competing for development space and should not be allowed to inadvertently restrict air cargo operation and growth. When viewing the existing and future air cargo volumes at EYW, and the fact that UPS and FedEx ship significantly more cargo than the passenger airlines, EYW should ensure that they can continue to operate efficiently.

4.7 General Aviation

The following sections will compare the forecast GA demand to the existing capacity of GA facilities available at the Airport. This comparison is used to determine future facility requirements and to ensure the Airport is positioned to serve forecast activity levels over a 20-year planning horizon. To accomplish this, three distinct elements are examined:

- Aircraft storage and hangar facilities
- Aircraft ramp and parking area
- FBO facilities, landside access, and vehicle parking areas

4.7.1 AIRCRAFT STORAGE AND HANGAR FACILITIES

GA hangars at an airport are planned for both based and itinerant aircraft. Requirements are calculated based on the size and quantity of aircraft based at the Airport. Given the warm and sunny, coastal climate at EYW, it is typical for a large percentage of the aircraft based at the Airport to be regularly stored in hangars. Records show that 65 to 75 percent of the based aircraft are stored within some type of hangar facility at any given time. All based jet aircraft and rotorcraft are stored in hangars. As such, it is assumed for the purpose of planning hangar

space requirements that 70 percent of all future based single-engine and multi-engine aircraft and all jet and rotorcraft will require indoor hangar facilities. Although each aircraft at the Airport will vary in size, the following planning factors were used to calculate future hangar space requirements:

- 1,200 square feet for single-engine and rotor aircraft
- 1,600 square feet for multi-engine aircraft
- 3,200 square feet for jet aircraft

The forecast for based aircraft reflects stable growth for all aircraft types over the planning period. Multi-engine and jet aircraft, however, will account for the majority of based aircraft growth at the Airport, as they are forecast to increase from 11 to 23 and 4 to 8, respectively. The overall hangar requirements are presented in **Table 4.6-1** and **Table 4.6-2**. Included in the hangar demand is an additional 10 units for small aircraft to address the current (August 2016) hangar waiting list of 10 individuals. Further, to provide for the indoor storage of up to 4 transient jet aircraft, an additional 13,000 square feet of conventional hangar space is depicted in all years.

When considering existing conventional hangar space at EYW, just over 18,000 square feet is available. This includes the two hangars (12,000 square feet and 6,200 square feet), as described in Section 2.5.3.2. Presently, individual unit hangars at EYW include 11 nested T-hangars and 8 small-box hangars across four buildings, as described in Section 2.5.3.1.

Table 4.6-1: Aircraft Hangar Requirements—Individual Unit Hangars

	2015	2020	2025	2035
Based Aircraft	58	63	67	79
Based Aircraft in Hangar	42	46	49	58
Individual Unit Hangars Required	19	26	29	34
+ Hangar Waiting List (10 Units)	29	36	39	44
Existing Individual Unit Hangars	19	19	19	19
Surplus/(Deficiency)	10	(17)	(20)	(25)

SOURCE: McFarland Johnson, Inc. September 2016.
PREPARED BY: McFarland Johnson, Inc., September 2016.

Table 4.6-2: Aircraft Hangar Requirements—ClearSpan Hangars

	2015	2020	2025	2035
Based Aircraft	58	63	67	79
Based Aircraft in Conventional Hangar	23	20	20	24
Single-Engine Aircraft – Square Feet Required	12,480	7,224	5,544	3,948
Multi-Engine Aircraft – Square Feet Required	12,320	12,544	13,440	18,032
Jet Aircraft – Square Feet Required	12,800	16,000	19,200	25,600
Helicopter – Square Feet Required	1,200	1,200	1,200	1,200
Total Square Feet Required	38,800	36,968	39,384	48,780
Plus Transient Need (13,000 Square Feet)	51,800	49,968	52,384	61,780
Existing GA Hangars Square Feet	18,200	18,200	18,200	18,200
Surplus/(Deficiency) Square Feet	(33,600)	(31,768)	(34,184)	(43,580)

SOURCE: McFarland Johnson, Inc., September 2016.
PREPARED BY: McFarland Johnson, Inc., September 2016.

4.7.1.1 Recommendation

The existing GA demand for hangar space exceeds current capacity for both individual-use hangars (T-hangar units and small-box hangars) and space within a multiuser ClearSpan hangar. To adequately provide for the

forecast demand through the planning period ending in 2035, the Monroe County should plan for an additional 11 individual-use hangars, as well as an additional 40,000 to 45,000 square feet of ClearSpan hangar space.

4.7.2 GENERAL AVIATION AIRCRAFT RAMP AND PARKING AREA

Given the wide variety of aircraft that can be categorized as GA, the planning of GA aprons is largely dependent on aircraft parking demand and aircraft movements. There are four components that typically determine the required apron area for GA uses: based-aircraft parking, itinerant aircraft parking (transient apron), aircraft fueling apron, and staging and maneuvering areas. The sum of these components determines the total area of apron required to meet the forecast level of GA demand at EYW.

4.7.2.1 Based and Itinerant Aircraft Parking

For planning purposes, based and itinerant GA aircraft apron requirements are usually considered separately, since they serve different functions and support users with varying levels of familiarity with the airfield and its GA facilities. Historically, a significant number of based aircraft have been stored in conventional hangar or T-hangar storage, as opposed to parked on the apron. Records have shown that anywhere from 25 to 35 percent of based aircraft could be stored on the apron at any given time. Therefore, it is assumed that 30 percent of future based aircraft will regularly require apron space.

Planning metrics to estimate the apron space required for itinerant aircraft parking are provided in Airport Cooperative Research Program (ACRP) Report 96, *Apron Planning and Design Guidebook*. This report states that approximately 110 square yards of apron space should be provided for ADG I aircraft and 165 square yards for ADG II aircraft when an adjacent taxilane is provided. However, to account for maneuvering space on the apron, these values were increased to 300 square yards for ADG I aircraft and 600 square yards for ADG II aircraft when providing for Group II separation.

As detailed in Section 2.5.2, the main GA apron spans approximately 26,500 square yards while three auxiliary GA aprons total an additional 17,700 square yards. This space, however, is inclusive of staging and maneuvering area in front of apron-fronting hangars. **Table 4.6-3** presents the required GA apron space strictly for the parking and tying down of aircraft at EYW with the following assumptions:

- Adequate apron area must be reserved for all based aircraft not stored in hangars, as well as peak period itinerant aircraft, without limiting access to or utility of the hangars adjacent to the apron area.
- The percentage of based aircraft not stored in hangars (30 percent) will be maintained throughout the forecast period.
- The peak period for apron utilization is calculated by applying a multiplier of 2 to the peak hour calculation for itinerant aircraft to account for peak periods that extend beyond a single hour.
- Group I aircraft represent 40 percent of the total aircraft calculated to require apron space during the peak period and require 300 square yards of apron space each to provide for tie-down area, safety clearances, and movement area.

- Group II aircraft represent 60 percent of the total aircraft calculated to require apron space during the peak period and require 600 square yards of apron space each to provide for tie-down area, safety clearances, and movement area.
- As apron space is an imperative element to overall airfield utility and capacity, a 20 percent buffer will be applied to the calculation of apron requirements in order to ensure ample apron space is provided over the planning period.

Table 4.6-3: General Aviation Apron Space Requirements—Parking and Tie-Down

	2015	2020	2025	2035
Based Aircraft	58	63	67	79
Based Aircraft on Apron (30% of Based Aircraft less Jet and Helo)	16	17	18	21
Itinerant Aircraft – Peak Period (2*Peak Hour)	18	20	22	26
Total Aircraft Parked on Apron	34	37	40	47
Total Required GA Apron (Square Yards)	16,272	17,808	19,200	22,560
Total Required GA Apron + 20% Buffer (Square Yards)	19,526	21,370	23,040	27,072
Existing GA Apron (Square Yards)	44,200	44,200	44,200	44,200
Surplus/(Deficiency) (Square Yards)	24,674	22,830	21,160	17,128

SOURCE: McFarland Johnson, Inc., September 2016.
PREPARED BY: McFarland Johnson, Inc., September 2016.

4.7.2.2 Aircraft Fueling Apron

Presently, GA aircraft are fueled through the use of fuel trucks owned and operated by Signature Flight Support. It is recommended that space be reserved if the GA apron is further developed to support a self-service fuel farm with one 3,000- to 5,000-gallon tank specifically for the use of GA aircraft. The fueling facility would require sufficient apron space to fuel one of the Airport's larger GA aircraft users and at the same time provide adequate room and separation to stage one waiting aircraft of the same type. Based upon the dimensions of a Beechcraft King Air (B350/B300/B200/B100), an aircraft that operated over 15 times per week (780 annual operations) at EYW in 2015, an area of approximately 1,200 square yards should be reserved for the fuel facility to provide room for one aircraft to fuel while another waits. In addition, room should be reserved for a containment area for Spill Prevention and Countermeasure and Control (SPCC), per the National Air Transportation Association (NATA) and the Environmental Protection Agency (EPA). The containment area should consist of a pad large enough to accommodate the fuel truck, a collection system, valve box, and containment area.

4.7.2.3 Staging and Maneuvering Areas

Adequate space for the safe maneuvering of aircraft in and around hangar facilities must also be included in any forecast of apron requirements. Staging and maneuvering is most closely associated with the provision of space in front of conventional ClearSpan hangars. Currently, sufficient staging and maneuvering space is available on each of the aprons providing access to hangars at EYW. The presence of staging and maneuvering

space, however, can hinder the amount of space for the parking of aircraft. This is particularly evident when aircraft park near the FBO Terminal/Office building, causing the potential to restrict access to the conventional and box hangars located just west of that building. Adequate staging and maneuvering space for these hangar facilities, as well as the access roadway intercepting the apron at Security Gate #5, would limit aircraft parking positions in front and to the northwest of the FBO Terminal/Office building to as few as two. As additional hangars are constructed at the Airport, it is recommended that these hangars provide sufficient staging and maneuvering apron, comparable to the size of the hangar, while not significantly impacting the layout and the availability of space for aircraft parking. Based on the facility requirements for aircraft hangars at the Airport, approximately 6,500 square yards of additional apron will be necessary for staging and maneuvering through the planning period.

4.7.2.4 Recommendations

While the analysis does not indicate a need for additional apron capacity for based and transient aircraft, operational restrictions to both the GA apron and commercial service apron have been noted as a result of the physical fence that separates and distinguishes these two apron spaces. As commercial operations continue to grow at EYW, portions of the existing GA apron, including the area currently leased by Signature Flight Support east of the commercial aircraft parking positions, will need to be reallocated for commercial use. Removal or reconfiguration of the on-apron fence will increase mobility of all aircraft and enable commercial operations to utilize apron space when there is overflow during times of peak activity. The development of a separate GA fueling apron should be considered, with approximately 1,200 square yards designated for the parking of two GA aircraft. Additional staging and maneuvering space should be constructed as part of any additional hangar construction at EYW.

4.7.2.5 Terminal

A GA terminal provides space for offices, waiting areas, flight planning, concessions, storage, and other amenities for pilots and passengers. GA terminals also provide the first and last impression of the Airport and local area that GA pilots and passengers experience. The following analysis was conducted to estimate the amount of space that should be considered to accommodate the pilots/passengers expected during the planning period. An estimate of the peak hour GA pilots/passengers is necessary to determine the number of people that would use the GA terminal facilities during a 1-hour period. To estimate the peak hour pilots/passengers and explore gross GA terminal spatial requirements, guidance from ACRP Report 113, *Guidebook on General Aviation Facility Planning*, was utilized and the following methodology was applied, with results shown in **Table 4.6-4**

- The number of operations conducted during the peak hour of the average day during the peak month was calculated using data from the forecasts presented in Section 3. It was assumed that arriving and departing GA pilots/passengers could use the terminal at the same time. Likewise, both local and itinerant operations would require terminal space at the Airport.
- Though there is limited flight training activity at EYW, peak hour operations were reduced by 10 percent to eliminate any activity associated with pilot training. While training operations require terminal space (e.g., flight planning, meeting with flight instructor, restrooms, etc.), not all have a direct relationship.

- The adjusted peak hour operations (arriving or departing) were estimated to have an average of 2.5 people on board (pilots and passengers). A staff assumption of 6 was also added.
- An area of 150 square feet was used for each peak hour pilot/passenger to determine the terminal space requirements. This value accommodates all functions of a full-service GA terminal building, including FBO counter space, waiting area, snack room, office space, pilot's lounge, restrooms, training area, circulation space, etc.

Table 4.6-4: Terminal Gross Area Analysis

	PEAK HOUR OPERATIONS	ADJUSTED OPERATIONS	NUMBER OF PEOPLE	TOTAL TERMINAL SPACE DEMAND (SQ FT)	SURPLUS/ (DEFICIENCY)
Base Year					
2015	11	10	31	4,613	(2,431)
Forecast					
2020	12	11	33	4,950	(2,750)
2025	13	12	35	5,288	(3,088)
2035	15	14	40	5,963	(3,763)

SOURCE: McFarland Johnson, Inc., September 2016.
PREPARED BY: McFarland Johnson, Inc., September 2016.

The existing FBO terminal is approximately 2,200 square feet in size and includes a lounge, restroom, flight planning area, training room, reception area, conference room, private offices, and employee space. Approximately 1,600 square feet is available for Airport guests and aircraft passengers. As evident by the analysis presented, the existing terminal space is operating beyond its capacity during times of peak activity. Therefore, a new or expanded GA terminal facility should be considered. In addition to being undersized, the existing FBO terminal building is nearing 30 years old; while it was refurbished in 2013, the building is not anticipated to remain viable through the 20-year planning period in its present condition and configuration.

4.7.2.6 Access and Parking

Fixed Base Operator Landside Access

As described in Section 2.5.1, Signature Flight Support is the sole FBO at EYW and operates from two main buildings, including a small FBO office building and the FBO's maintenance hangar. These facilities are only accessible via Faraldo Circle, using the main Airport entrance, and then continuing on to Cabanas Way. This requires the driver to travel through the terminal departures roadway to gain access to the FBO parking area. This situation is less than ideal as it increases the utilization of the terminal departures roadway beyond what the terminal demand would require alone; it could, over time, add to congestion at the terminal curb. While direct access to the FBO parking area from South Roosevelt Boulevard would be ideal, spatial and environmental conditions within the vicinity are constraining factors.

Vehicle Parking

West of Faraldo Circle and accessible via Cabanas Way exist three distinct parking areas, all of which are available to GA users. In total, the area provides approximately 50 vehicle parking spaces. The number of parking spaces to be required in the future is primarily based on the level of peak-hour GA activity. The following methodology is based on a previously completed Aircraft Owners and Pilots Association Survey that found an average of 2.5 persons aboard the typical GA operation. Vehicle parking requirements for GA activities are displayed in **Table 4.6-5**.

- Determine the number of peak hour GA operations for based aircraft by taking 25 percent of the peak month average day itinerant operations and 100 percent of peak month average day local operations and assuming 12 percent of those operations occur within the peak hour.
- Determine the number of peak hour GA operations for transient aircraft by taking 75 percent of the peak month average day itinerant operations and assuming 12 percent of those operations occur within the peak hour. It is assumed that these aircraft, while not based at EYW, will be picking up passengers at the Airport and will require parking spaces.
- Determine the number of peak-hour pilots and passengers by multiplying the number of peak hour operations by 2.5.
- Estimate the number of parking spaces in use by assuming that parking demand will be half the number of pilots and passengers, since parking spaces will be utilized only by departing pilots and passengers.
- Multiply by a contingency factor of 1.3 to account for on-site employees requiring use of the GA parking area and also to allow for parking flexibility during times of above average demand.

Table 4.6-5: Vehicle Parking Space Requirements for General Aviation Users

YEAR	GA PEAK HOUR OPERATIONS	GA PEAK HOUR OPERATIONS (BASED)	GA PEAK HOUR OPERATIONS (TRANSIENT)	PILOT AND PASSENGER PARKING DEMAND	CONTINGENCY	TOTAL PARKING DEMAND	EXISTING PARKING SPACES	SURPLUS/ (DEFICIENCY)
2015	11	4	7	29	1.3	37	50	13
2020	12	4	8	30	1.3	39	50	11
2025	13	5	8	32	1.3	42	50	8
2035	15	5	9	36	1.3	47	50	3

SOURCE: McFarland Johnson, Inc. September 2016.
PREPARED BY: McFarland Johnson, Inc., September 2016.

As shown, 47 vehicle parking spaces are identified to be required for GA purposes through 2035. Although this requirement supports GA aircraft utilizing all three of the GA aprons, two of which being located far from the parking area, no separate parking facilities are proposed. As a result of the existing layout of the airfield and the limited accessibility as a result of the inland salt ponds comprising much of the southeast quadrant of the

airfield, vehicular access to the easternmost GA apron areas is infeasible. However, with the development of any additional GA hangar facilities, additional GA parking should be considered.

4.7.2.7 Recommendations

It is recommended that either a new GA terminal of approximately 6,000 square feet of publicly accessible area be constructed or the existing terminal be similarly expanded. Additionally, opportunities to provide direct access to GA facilities and vehicle parking areas where GA users are not required to traverse the terminal frontage loop road should be explored. Providing direct access to GA areas in this way would better serve the GA users and disburden the vehicular demand at the terminal curb. Lastly, with the addition of any new hangar space, new vehicular parking space should be provided.

4.7.3 SUMMARY OF GENERAL AVIATION FACILITY REQUIREMENTS

Several requirements for GA facilities have been discussed in the preceding sections. A summary of the key requirements are presented in **Table 4.6-6**.

Table 4.6-6: Summary of General Aviation Facility Requirements

ITEM/FACILITY	EXISTING FACILITY OR CAPACITY	ULTIMATE REQUIREMENT (2035)	DEFICIT
GA T-Hangar Units	19	44	25
GA Conventional Hangar Space (Square Feet)	18,200	61,780	43,580
GA Aircraft Parking Apron	44,200	27,072	None
GA Fueling Apron	0	1,200	1,200
FBO Terminal	2,200	6,000	3,800
GA Vehicle Parking	50	47	None

SOURCE: McFarland Johnson, Inc. September 2016.
PREPARED BY: McFarland Johnson, Inc., September 2016.

4.8 Support Facilities

Support facilities provide essential, core services needed for the safe and efficient operation of airports. Support services will vary based on the type of airport and the amount of passenger and aircraft activity. An assessment of these services has been conducted to determine if they are adequately meeting the current needs of EYW, or if improvements are needed for meeting an acceptable performance level. They have also been evaluated to determine if the services they currently provide will be compatible with forecast airport growth and recommended development. The following support facilities are discussed in this section of the Master Plan: fuel storage facility; ARFF; Monroe County Sheriff's Office, Airport Security Division; U.S. CBP facility; airport maintenance facilities; and the ATCT. **Exhibit 4.7-1** shows the on-Airport location for the current facilities.

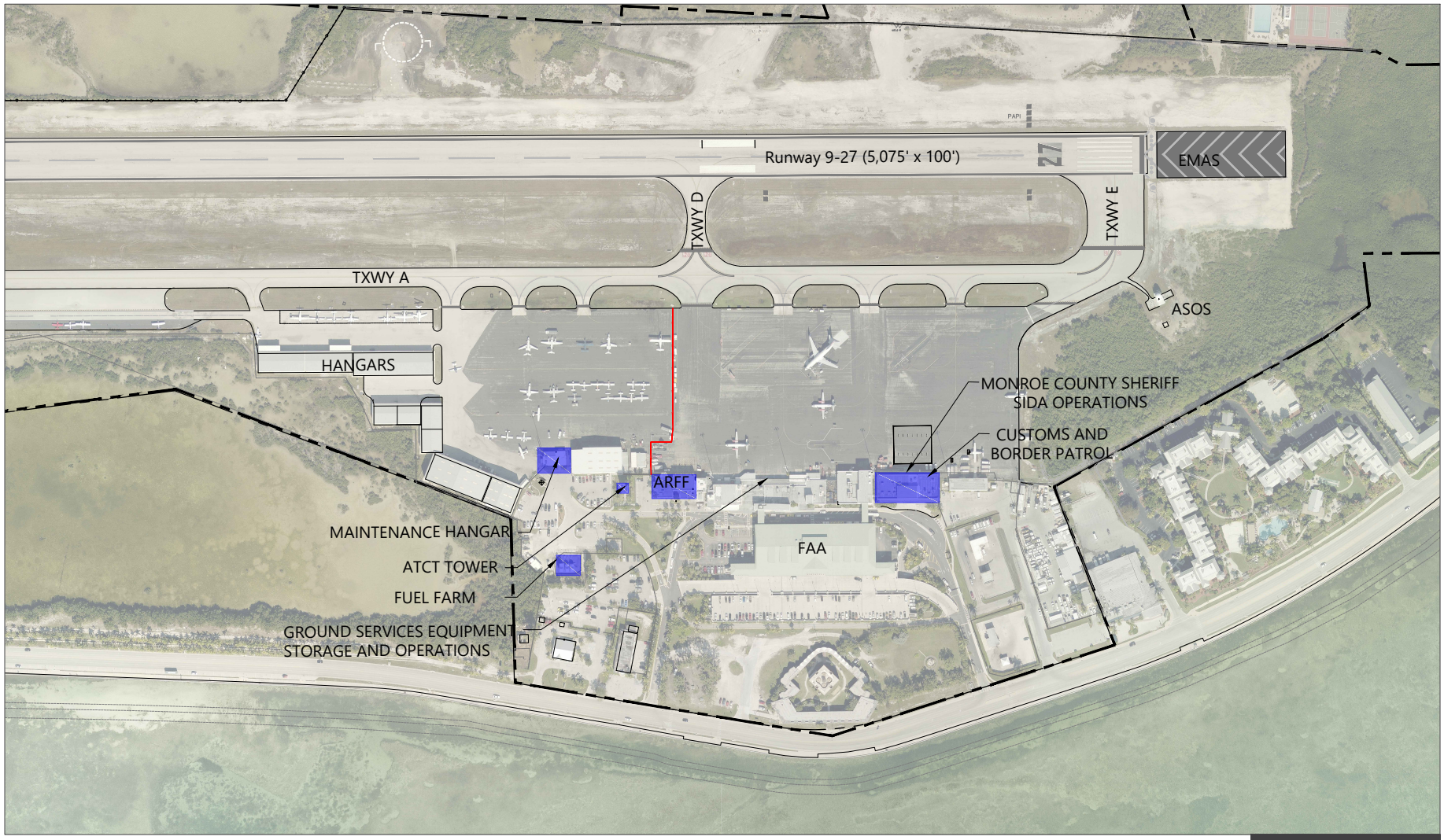
4.8.1 DEMAND/CAPACITY ASSESSMENT

Using FAA regulations, Florida Department of Transportation (FDOT) guidance, ACs, and information provided by airport users, the following facilities were examined to determine if they are meeting the current and future needs of EYW: the existing fuel storage facility; the ARFF; the Monroe County Sheriff's Office, Airport Security Division; the U.S. CBP; the airport maintenance facilities; and the ATCT. Areas of concern that may have been raised by managers during the on-site and follow-up interviews were also addressed. The following subsections provide a description of each facility, as well as the standards that were used to evaluate each facility.

4.8.1.1 Fuel Storage Facility

The fuel storage facility is also referred to as a fuel farm. The fuel farm at EYW is owned and operated by Signature Flight Support. It consists of three 12,000-gallon aboveground tanks (see **Exhibit 4.7-2**). Two of these tanks contain Jet A fuel, and the third contains 100LL fuel for piston-powered aircraft. The fuel farm includes three fueling racks that can be used concurrently by up to five trucks. Three of the fuel trucks contain 5,000 gallons of Jet A fuel, while the remaining two trucks contain 1,000 gallons of 100LL fuel. Signature Flight Support staff did not identify concerns or issues that should be addressed as part of the update of the Master Plan.[14]

[14] General Manager, Signature Flight Support, February 29, 2016.



SOURCE: Basemap and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., November, 2016.

EXHIBIT 4.7-1

NORTH 0 □00 ft□

On Airport Support Facilities Locations

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Exhibit 4.7-2: Fuel Storage Facilities



SOURCE: American Infrastructure Development, Inc., 2016.
PREPARED BY: American Infrastructure Development, Inc., 2016.

Since the 2003 Master Plan's Fuel Farm Facility Inventory and Facility Requirements Evaluation, there has been no change to the fuel farm's tank capacity. At the time, the fuel farm consisted of three 12,000-gallon aboveground tanks, with two of the tanks containing Jet A fuel and one containing Avgas. The fuel farm had three fueling racks that were used by four trucks (five currently). Two of the fuel trucks contain 3,000 gallons of Jet A fuel (currently three fuel trucks contain 5,000 gallons of Jet A). The remaining two trucks contained 1,200 gallons of Avgas (currently two trucks contain 1,000 gallons of 100LL fuel).

The County's requirements for EYW's fuel storage facility specify that the FBO comply with standards for managing the fuel farm tank and for refueling vehicles.[15] The FBO must provide and maintain a minimum of 20,000 gallons of aviation fuel storage capacity for each grade of aviation fuel that is usually required for aircraft using EYW. The requirements also state that 100 octane aviation gasoline and Jet A aviation kerosene base fuel should always be available; the FBO will provide an adequate number of fueling trucks with the volume and pumping capacity to sufficiently service the aircraft normally using EYW; and the FBO will provide and maintain pumping equipment with a pumping efficiency and capacity that is sufficient to service the aircraft normally using EYW. Based on the information provided by Airport staff, the current FBO is exceeding these minimum standards.

During follow-up interviews with Senior Operations Management staff at the airport, a concern was raised about providing direct access for fuel trucks to the fuel farm. Currently, the fuel trucks must use the same landside roadway system that passengers use to access the terminal complex. These trucks are just below the height restrictions needed to clear the connector walkways between the departure level and the arrivals area of the

15 Resolution No. 374-1990 A Resolution Of The Board Of County Commissioners Of Monroe County Florida Approving The Revised Minimum Standards For Commercial Aeronautical Activities By Fixed Base Operators And Other Aeronautical Service Providers At Monroe County Airports, The Board Of County Commissioners Of Monroe County Florida, August 1, 1990.

terminal. Operations staff has estimated that these trucks transport fuel to the fuel farm site approximately five to seven times daily. Identifying an alternate route for these fueling trucks would be desirable to enhance safety in the terminal area because they are transporting large quantities of highly flammable materials.

4.8.1.2 Air Rescue and Firefighting Facility

In 14 CFR Part 139, *Certification of Airports*, an ARFF index table specifies the type of facility and equipment best suited to provide rescue and firefighting activities at a commercial service airport. These standards are based on the type and dimensions of the largest and most frequently flown aircraft at an airport, as well as based on the number of average daily departures. Based on these standards, EYW is classified as an ARFF Index B airport. This means that the ARFF can respond to emergencies for aircraft at least 90 feet long but less than 126 feet long. In the case of EYW, this would include Boeing 737 aircraft. To enforce compliance with the ARFF index and many other requirements, the FAA conducts annual, comprehensive inspections of all airports certificated under 14 CFR Part 139.

The EYW ARFF facility is operated by the Monroe County Fire Rescue/Key West International Airport, Station 7; in addition to ARFF services, it provides fire suppression and emergency medical services. The ARFF has 13 fire fighters; 3 to 4 are on duty for a 24-hour shift, 365 days per year. The ARFF facility is located on the east side of the ATCT. This facility has three vehicle bays, two ARFF vehicles, a quick response vehicle, and a backup inspections vehicle (see **Exhibit 4.7-3**). The ARFF vehicles carry specified quantifies of water, aqueous film-forming foam chemicals, dry chemical fire retardants, and nitrogen and halotron as the firefighting propellants.

Exhibit 4.7-3: Aircraft Rescue and Firefighting Facility



SOURCE: American Infrastructure Development, Inc., 2016.
PREPARED BY: American Infrastructure Development, Inc., 2016.

The FAA has stated that the primary objective in locating and orienting an ARFF station is to provide a timely response, protect life and property, and minimize the effects of an aircraft accident or incident or a catastrophic event occurring primarily on airport property. Consequently, the evaluation of the existing ARFF in this Master

Plan is focused on the operational criteria provided in FAA AC 150/5210-15A, Aircraft Rescue and Firefighting Station Building Design. This AC provides guidance on the siting, design, and operation of an ARFF consistent with the requirements under 14 CFR Part 139. EYW's ARFF was evaluated using the following operational criteria:

- Immediate, straight access to the airfield network.
- Unimpeded access routes with minimum turns to the airfield network and aircraft aprons.
- Direct access to the terminal aprons, minimizing the crossing of active runways, taxiways, or difficult terrain. This parameter is critical because of the need for a timely, safe response to emergencies on the ramps, aprons, or terminal areas. Response routes that do not require ARFF vehicles to enter the aircraft movement area will reduce the risk of airfield incursions.
- Non-interference with the ATCT's line of sight.
- Maximum surveillance of the airfield.
- Adherence to the building restriction line, as determined using AC 150/5300-13, Airport Design.

Based on site visits and a tour of the ARFF in the spring of 2016, the aforementioned operations criteria in AC 150/5210-15A are met.

4.8.1.3 Monroe County Sheriff's Office, Airport Security Division

The importance of Airport security is paramount to the continued safe operation of EYW. The Monroe County Sheriff's Office, Airport Security Division is in the Annex building; it contains offices, a breakroom, and a security office (see **Exhibit 4.7-4**). The Security Division provides landside and airside security for EYW, such as coordinating the badging function and the Security Identification Display Area training for airport employees and contractors. The Security Division provides security at EYW 24 hours per day, 7 days per week. ASTs monitor cameras and computerized door access alarms in EYW's Security Department Control Room. Additional sheriff's deputies and ASTs are stationed at the gate between the general aviation and commercial ramp areas to check cargo and to authorize access to the secured area of the commercial ramp. They also patrol the perimeter of EYW, assist passengers as necessary, and enforce the ground transportation rules of EYW. EYW's Security Division has 24 staff who report to the Director of Airport Security.

The location of EYW's Security Division facility must be visible, centrally located, and located near the various Airport departments, agencies, the passenger terminal, and other landside and airside facilities they interface with, monitor, and protect. The Security Division's current location meets these criteria.

Exhibit 4.7-4: Monroe County Sheriff's Office, Airport Security Division



SOURCE: American Infrastructure Development, Inc., 2016.
PREPARED BY: American Infrastructure Development, Inc., 2016.

4.8.1.4 U.S. Customs and Border Patrol

Aircraft arrivals from the Caribbean have increased the need for improvements to the U.S. CBP facility. There is also the potential for increased air service to Cuba.

On January 14, 2011, President Obama directed the State, Treasury and Homeland Security Departments to take steps to change regulations and policies so that they would allow U.S. airports to provide services to licensed charters for flights to Cuba. In order to take advantage of this opportunity to provide the community with this new air service, the airports must be international and have adequate customs and immigration capabilities.[16] Consequently, EYW started the process to be designated a Port of Entry by the CBP. CBP approved EYW as a Port of Entry in October 2011 with the capability to process 10 passengers and flight crew from Cuba at a time.[17]

Airport management is expecting the flights to and from Cuba to increase as more airline routes are approved by the United States Department of Transportation (USDOT). For example, in March 2016, the busiest airline at EYW, Silver Airways stated in a local news article[18] that it wanted to fly to destinations throughout Cuba. That airline currently flies 34-passenger twin-propeller charter aircraft. The airline indicated that it had started the application process with the USDOT to fly from five Florida airports to 10 destinations in Cuba. The airline's strategy was to provide convenient, direct service to smaller communities throughout Cuba from EYW, as well

16 White House, Office of the Press Secretary, January 14, 2011 Release entitled, "President Obama Announces New and Expanded U.S. Travel Regulations to Cuba"

17 The Associated Press, "First Commercial Flight from Key West to Cuba In More Than 50 Years Takes Off", December 30, 2013

18 Kevin Wadlow, Keynoter, "Silver Airways wants Cuba route from Key West", March 5, 2016

as from other Florida airports. Airport officials recognized the benefits of this expanded international service by one of its dominant airlines, as well as recognized the implication that other airlines would follow suit.

In anticipation of expanded international air service beyond the ability of the current U.S. CBP's ability to process, the County has accelerated a multi-phase construction project to increase the capacity of the U.S. CBP facility. The County is currently in the process of expanding the facility to accommodate current and future passenger demand.

The current U.S. CBP facility functions as a Port of Entry. This means that the facility is a controlled point of entry into the United States from foreign countries. It provides an inspection point for various agencies for the enforcement of immigration laws, customs regulations, and agricultural import restrictions. Given the interest in increasing international service by airlines currently operating at EYW, the U.S. CBP facility must be able to process larger aircraft.

The U.S. CBP facility is located within the Annex building (see **Exhibit 4.7-5**). It is open Monday through Saturday from 8:00 a.m. to 8:00 p.m. and closed on Sunday. The U.S. CBP has 13 employees. Its interior space consists of offices, a breakroom, and waiting areas and other ancillary uses. The U.S. CBP has direct access to the apron for conducting aircraft inspections. The U.S. CBP staff has indicated that the existing EYW facility does not meet current Department of Homeland Security standards. The facility has the capacity to process general aviation and charter aircraft passengers entering the United States, but it does not have the capacity needed to process passengers from commercial flights. The current processing rate is 10 international passengers per hour.

Exhibit 4.7-5: U.S. Customs and Border Patrol



SOURCE: American Infrastructure Development, Inc., 2016.
PREPARED BY: American Infrastructure Development, Inc., 2016.

The County conducted a study in 2013 that resulted in a recommended renovation and expansion program for the U.S. CBP facility, and this expansion program is currently being implemented. The size of the U.S. CBP will increase from 9,392 square feet to 14,744 square feet.

4.8.1.5 Airport Maintenance Facility

Airport maintenance facilities at EYW are not housed in a free-standing building. Instead, many of their functional and storage areas are decentralized due to a lack of space. There are currently five employees who work the following three staggered shifts: 7:00 a.m. to 4:00 p.m., 8:00 a.m. to 5:00 p.m., and 9:00 a.m. to 6:00 p.m. A janitorial contract supplements the services for the passenger terminal and offices, and there is a landscaping contractor for the airfield and landside areas. The janitorial staff has offices and cleaning supply storage in the passenger terminal.

The staff performs routine maintenance on their equipment and trucks. However, they use the services of the Monroe County Public Works Department to repair their vehicles. The Monroe County Public Works Department is located on the east side of the airport.

Airport maintenance is responsible for airside and landside repairs, maintenance, and recycling. It will incur additional responsibilities and storage needs associated with maintaining the runway's new PAPI navigation aid after the VASIs are removed. The FAA currently maintains the VASIs.

The primary office for Airport maintenance is in the administrative offices of the Annex building. The space is on the upper level and comprises two offices and a common area; it is approximately 375 square feet. Airport maintenance staff parks in the space assigned to Airport employees next to the Airport Administration building.

Airport maintenance also has a maintenance shop in the arrivals Annex of the Administration building. This space contains the breakroom, lockers, and storage. The vehicles and equipment are stored in the lower level of the passenger terminal garage on the southwest end. Due to passenger parking demand, this storage space has been reduced. In this area, Airport maintenance stores an airfield pickup truck, two County trucks, one sweeper, trailers, excavators, traffic cones, and other equipment. It is estimated that this storage area is 2,400 square feet (or six vehicular parking spaces with a 10-foot back-out lane). Storage is not provided for airfield mowing, since it is contracted to a private company.

An interview with Airport maintenance staff was contacted in the Fall of 2016 to obtain input regarding how they operate within their current facilities and what recommended actions could enable them to continue their desired level of service. When asked if the maintenance staff had grown since the last update to the Master Plan and if there were plans to expand their staffing level, staff indicated that the number of maintenance staff has remained constant since the construction of the current terminal in 2009.

When asked about the location and adequacy of space, staff indicated that their location for various functions was decentralized due to not having a consolidated Airport maintenance facility. (See **Exhibit 4.7-6**). Also, decentralized locations and inadequate storage space for their supplies and equipment were creating a challenge. To perform routine maintenance and work order repairs expeditiously, parts and materials need to be readily available. However, they do not have the space to warehouse these items, which are spread out throughout the Airport property. For example, the electrical room is in one location, and there are three Connex storage containers (approximately 300 square feet each) near the fuel farm. In addition to centralizing these areas, the staff felt a maintenance garage was needed to store their vehicles and to conduct routine maintenance. Portable lockers for warehouse supplies would also be helpful.

Exhibit 4.7-6: Location of Airport Maintenance Facilities Storage Area in Passenger Terminal Garage



SOURCE: American Infrastructure Development, Inc., 2016.
PREPARED BY: American Infrastructure Development, Inc., 2016.

4.8.1.6 Air Traffic Control Tower

The EYW ATCT was constructed in 1973 (See **Exhibit 4.7-7**). The ATCT is part of the FAA's contract tower program. It is operated by RVA Robinson Aviation, Inc. during the hours of 7:00 a.m. to 9:00 p.m. every day except Sunday. RVA Robinson Aviation, Inc. has five employees. The ATCT is located on the west side of the ARFF building. Six parking spaces are provided at this facility.

During an interview with the ATCT staff in the spring of 2016, their management indicated that renovations and upgrades to the ATCT facilities had been programmed by the federal government, and authorization was anticipated. Follow-up attempts were made to obtain more information from Airport staff. However, beyond the need to update a facility constructed in the 1970s, specific information was not available.

Exhibit 4.7-7: Air Traffic Control Tower



SOURCE: American Infrastructure Development, Inc., 2016.
PREPARED BY: American Infrastructure Development, Inc., 2016.

4.8.2 FACILITY REQUIREMENTS

There were no major capacity issues identified for the support facilities at EYW. Facilities such as those for the ATCT and the U.S. CBP are already in the process of being expanded to enhance their operations and to accommodate growth. All the other facilities discussed in this section are successfully fulfilling their missions. The following recommendations are offered to augment the continued good level of service the facilities provide as EYW experiences future growth.

4.8.2.1 Fuel Storage Facility

To provide an in-depth assessment of the future fuel farm facility's ability to accommodate forecast aircraft demand, the following types of data are needed: annual fuel sales, preferably from 2003 when the last Master Plan was completed; the peak fuel sales months for both Jet A and 100LL; and the current fuel supply that is maintained in number of days for both Jet A and 100LL. This information was not available during the assessment of the fuel farm. However, because the minimum standards are being met, and have even been exceeded in some instances since the 2003 Master Plan, expansion of this facility is not recommended. Further, it should be noted that the capacity of the Jet A fuel trucks has increased from 6,000 gallons to 15,000 gallons. This is an indication of EYW's expanded commercial service role and the ability of the fuel farm operator to accommodate this demand.

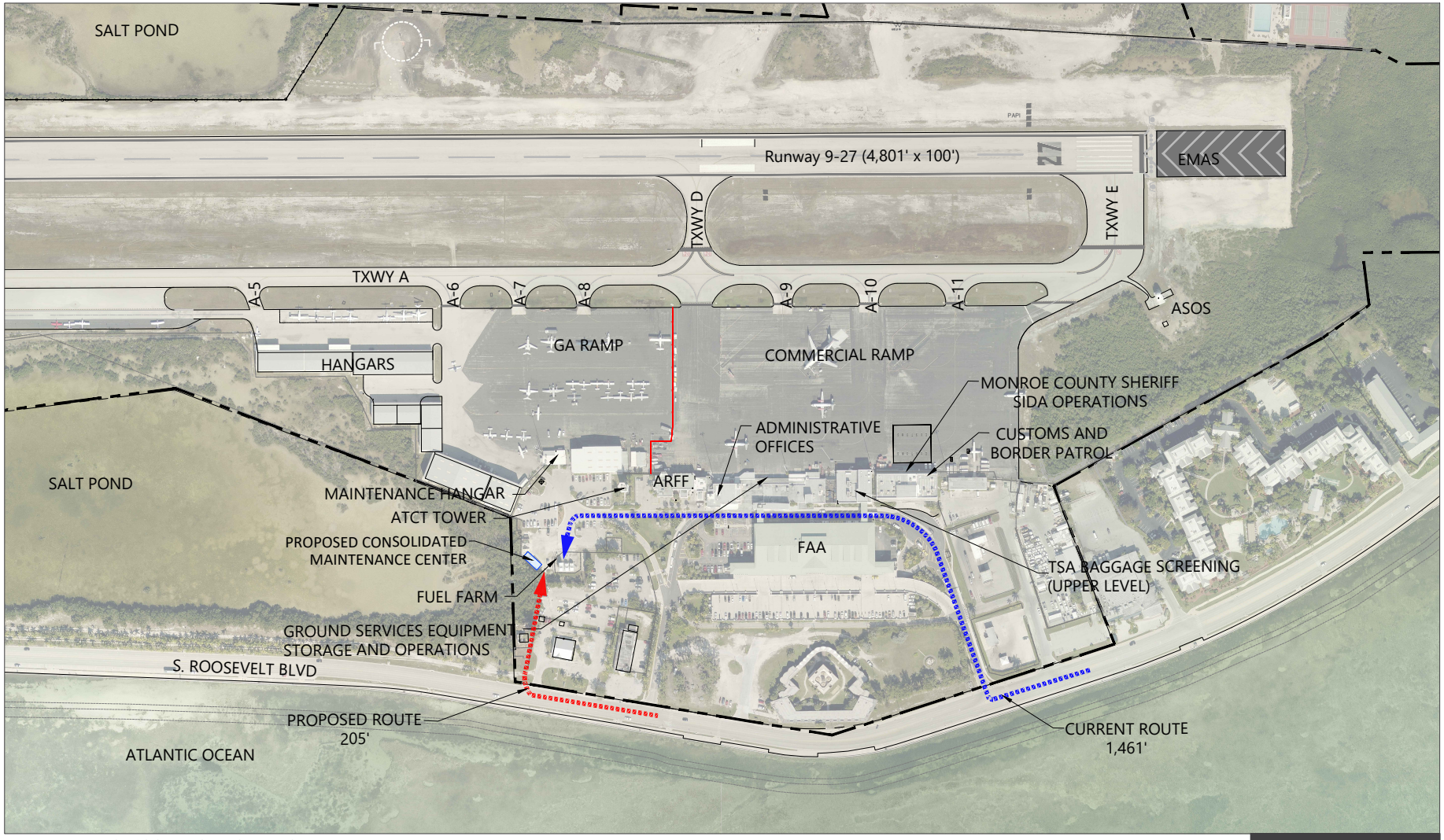
During follow-up interviews in the Fall of 2016, EYW senior staff in the Operations section indicated that a more direct on-airport route and access to the fuel farm should be explored. The issue of providing an alternate route for fuel delivery trucks that would remove them from the landside terminal roadway system is an important

consideration because it will enhance safety. As described previously, these fuel trucks access the Airport's fuel farm using the same road that passengers use in the terminal area.

Because the primary use of this new access would be for fuel tank trucks and possibly semi-trucks, roadway design guidance provided in the American Association of State Highway and Transportation Officials' (AASHTO) publication entitled, "A Policy on Geometric Design of Highways and Streets" and commonly referred to as the "Green Book" was used to determine the most appropriate roadway width. The "Green Book" design guidance for lane widths indicated that between 9- to 12-foot lanes are appropriate for semi-truck use in urban areas. Consequently, a bi-directional fuel farm access road should be between 18 to 24 feet wide is recommended. It is further recommended that this proposed alternative access route to the fuel farm is located to the immediate west of the Tax Collector/Driver's License Office building on-airport property. Its alignment would extend to the north approximately 205-feet from Roosevelt Boulevard to the fuel farm property.

In addition to providing a truck delivery route for both the fuel farm and consolidated maintenance center, this Proposed Alternative Access Route to the Fuel Farm could be utilized by UPS air cargo trucks or any other vehicular traffic destined to the west side of the airport.

Exhibit 4.7-8 entitled, "Proposed Alternative Access Route to the Fuel Farm" shows both the current route of fueling trucks to the fuel farm and the suggested alternate access service road alignment starting at Roosevelt Boulevard and terminating between the fuel farm and the proposed site for a consolidated maintenance center.



SOURCE: Basemap and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., November, 2016.

EXHIBIT 4.7-8

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Proposed Alternative Access Route to the Fuel Farm

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4.8.2.2 Air Rescue and Firefighting Facility

Based on a site visit to EYW, information provided by Airport staff, and a tour of the ARFF in the spring of 2016, the ARFF is consistent with the operations criteria in AC 150/5210-15A.

The aircraft operations and critical aircraft (C-III) forecast through 2035 indicate that EYW will continue to be consistent with ARFF Index B airport standards. Consequently, the ARFF does not need to be expanded. It is recommended that aircraft operations and the aircraft fleet mix using EYW are monitored during subsequent updates to the Master Plan to identify when a milestone could be reached that would trigger the need for expansion of the ARFF.

4.8.2.3 Monroe County Sheriff's Office, Airport Security Division

The County's Security Division provides comprehensive services for EYW, in which it maintains, promotes, and enforces safety and security for all Airport users. A follow-up interview was conducted in the Fall of 2016 with the Director of Airport Security of EYW's Security Division. It was indicated that EYW's Security Division was satisfied with the facilities and could not identify any concerns that should be addressed as part of this Master Plan. Consequently, expansion or relocation of the facility is not recommended.

4.8.2.4 U.S. Customs and Border Patrol

Airport staff has provided information indicating that the current U.S. CBP facility contains 9,392 square feet, and its processing rate is 20 passengers per hour. In response to EYW's current and future international service, Airport management is in the process of implementing an expansion program for the facility. This expansion plan will involve two levels and will be implemented in five phases. Once completed, the first-floor space will be 12,118 square feet. The second level will be 2,626 square feet. The combined areas will provide 14,744 square feet of space. When expansion is completed, the capacity will accommodate 70 passengers per hour. The U.S. CBP expansion has been designed to improve passenger flow by separating the "primary processing" (Immigrations) and "secondary processing" (Customs) areas consistent with the *Department of Homeland Security's U.S. Border Patrol Facilities Design Guide*.

The County is currently implementing EYW's Phase II expansion plans for the U.S. CBP facility. The Phase II expansion will provide additional office space, passenger and employee restrooms, an employee locker area, an expanded security lobby, increased passenger queuing, and a generator on Level 1. The Phase III expansion will also involve Level 1 and provides additional office space, a conference room, restrooms, and communication security space. During Phase IV additional space will be provided on Level 1 to accommodate vertical circulation, cashier space, waiting areas, triage, labs, interview rooms, holding and search rooms, and staff offices. Phase V is the final phase, and it will involve both Level 1 and Level 2. Level 1 will include bag pickup/drop off areas, Immigrations and Customs processing areas, secure storage, the Port Director's office, waiting areas, and additional office space. Level 2 will include an additional conference room, mechanical rooms, staff breakrooms, restrooms, and vertical circulation.

4.8.2.5 Airport Maintenance Facilities

It is recommended that an Airport maintenance warehouse building be constructed. This building should consolidate all staff, store equipment and supplies, and maintain vehicles and vehicle parking in one area. The location of this building must have direct access to both the airside and landside.

It has been noted that Airport maintenance currently stores some of its equipment on revenue-producing property, namely the passenger terminal garage. The staff has indicated that some storage space has been lost in the garage because of accommodating the need for passenger parking space. They are now down to six spaces. Using a parking garage to store equipment results in lost revenue for EYW, and it reduces the availability of enclosed parking for passengers during peak times. In addition, passengers will have longer search times during peak times and will possibly experience further inconvenience if remote overflow parking must be used. The overflow parking lot is located further away from the passenger terminal, and vehicles are exposed to the elements.

It is recommended that the County explore building a consolidated maintenance facility. To construct this building on-Airport, a space program must be developed to determine the most appropriate size of the building footprint and the amount of land needed. A space program is developed by conducting an inventory of all space currently used, determining the size of the space, understanding its purpose, and interviewing staff to understand how they operate, in addition to identifying problems and how they can best be solved.

As part of this study, the Planning Team requested any previous information or studies that addressed the need for a maintenance building. It is our understanding that in 2008 the County proposed that a 1,000- square-foot, 14-foot-high Airport maintenance building be constructed next to the fuel farm. As stated previously, Airport maintenance has three Connex storage containers near the fuel farm. Combined, they provide 900 square feet in storage space. It is felt that this location provides acceptable access to both the airside and landside. A space program would confirm if the proposed size and location would address current and forecast needs. **Exhibit 4.7-9** depicts the proposed Airport maintenance facility location that was previously considered by EYW staff.



SOURCE: Basemap and Aerial Photography, Jacobs, September, 2015
PREPARED BY: American Infrastructure Development, Inc., November, 2016.

EXHIBIT 4.7-9

NORTH 0 □50 ft□

Proposed Maintenance Facility Site

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Chapter 5

Alternatives Analysis and Recommended Development Plan

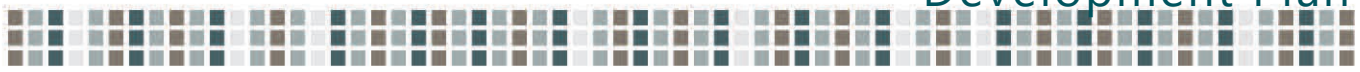


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5. Alternatives Analysis and Recommended Development Plan

A key objective of the master planning process is to identify alternative development strategies to accommodate forecast aviation activity.

Section 3 of this MPU provides a summary of forecast aviation activity at EYW. The forecasts were based primarily on continued incremental growth in passenger, cargo, and GA activity. Section 4 provides information on how the forecasts of aviation activity were translated into facility requirements for the master planning period (through 2035). The following requirements are key to developing alternatives that will adequately accommodate future needs:

- **Airfield requirements** include the need to consider options to increase the existing runway length and several airfield geometry improvements to meet the latest FAA design standards
- **Passenger terminal and apron requirements** consist of maximizing the efficiency of the aircraft apron parking plan and providing passenger loading bridges. Additional apron space is also required.
- **Landside access and parking requirements** consist of expanding the private vehicle parking area in front of the passenger terminal, as well as reducing congestion in front of the terminal curbside. Additional public parking is also required.
- **Air cargo requirements** are considered adequate to meet the existing and future demand. As the terminal building and apron are expanded to accommodate future demand, it may be necessary to relocate FedEx's operation.
- **GA requirements** consist of providing additional aircraft parking and storage facilities.
- **Aviation support requirements** consist of a new airfield maintenance facility, an ATCT replacement, and a phased CBP expansion program.

The overall goal of this MPU is to identify a development strategy that provides the specific facility requirements that align with forecast activity. This section has been guided by comments obtained from the Technical Review Committee (TRC), Airport leadership, and Monroe County.

5.1 Airfield Facilities

Several airfield deficiencies were identified in Section 4; they were evaluated for potential mitigation herein. These deficiencies include runway length, RSA, ROFA, runway centerline to parallel taxiway centerline separation, runway-end access, and airfield geometry.

5.1.1 RUNWAY LENGTH

A 5,400-foot-long runway is required to accommodate the flights anticipated to serve the EYW market through the planning horizon. Several alternatives were developed, which are described in the following subsections.

5.1.1.1 Alternative 1 – Extend Runway to the West

Alternative 1, depicted on **Exhibit 5.1-1**, proposes a 325-foot extension of Runway 9-27 to the west, to a total length of 5,400 feet. This alternative would require the mitigation of a World War II bunker, an Airport service road, and approximately 7 acres of salt ponds in the RSA. Additionally, the extended ROFA would also require the relocation of a public roadway. The proposed RPZ would have several incompatible land uses, including two residential structures and a public roadway.

5.1.1.2 Alternative 2 – Extend Runway to the East

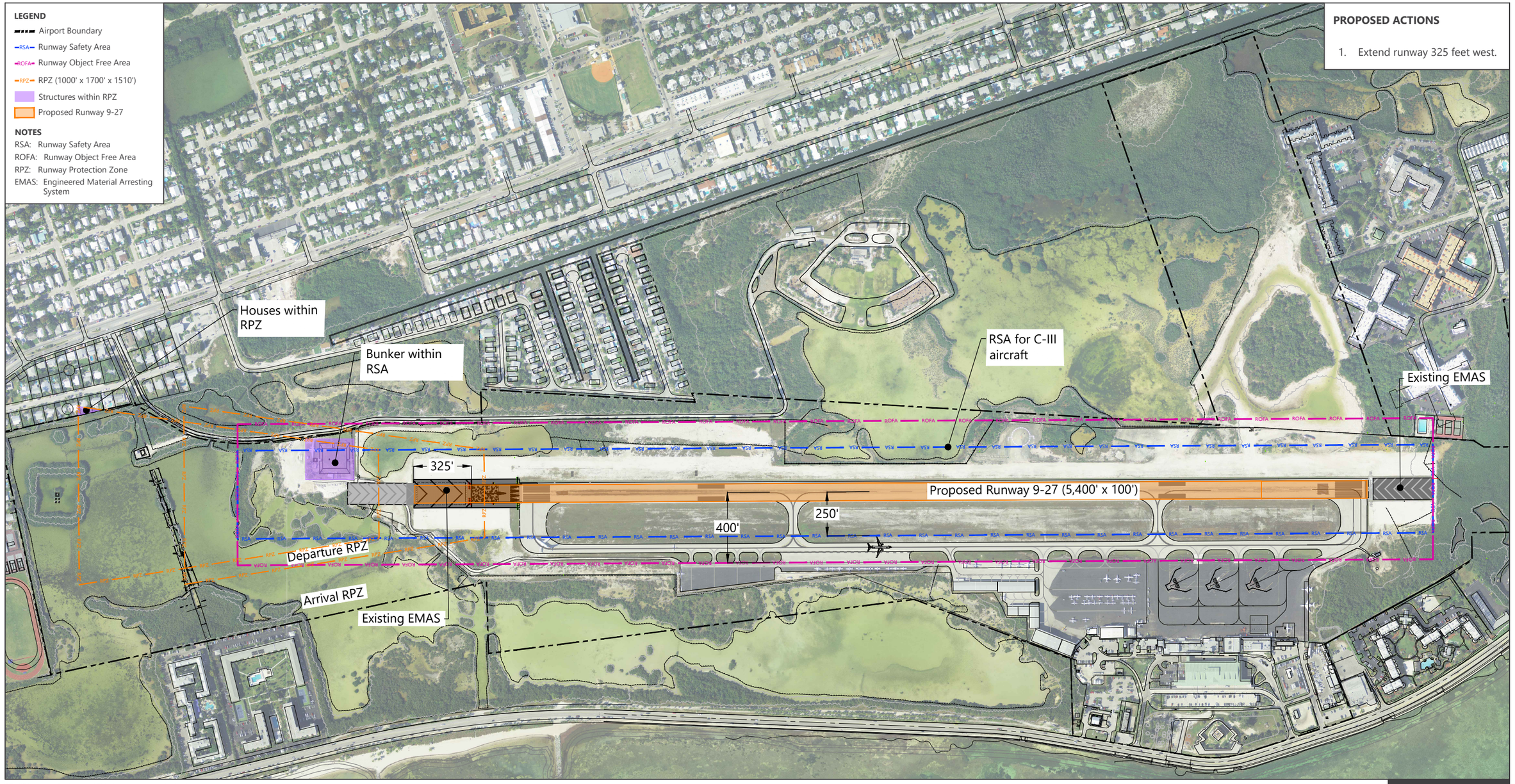
Alternative 2, depicted on **Exhibit 5.1-2**, proposes to extend Runway 27 to the east 325 feet, to a total length of 5,400 feet. The existing EMAS on the Runway 9 approach end will satisfy RSA requirements; however, the Runway 27 approach RSA would impact Florida State Route A1A, a salt pond, the Atlantic Ocean, and approximately 10 acres of vegetation. The extended ROFA would also impact State Route A1A, a pool, tennis courts, and a hotel.

5.1.1.3 Alternative 3 – Extend Runway to the East

Alternative 3, depicted on **Exhibit 5.1-3**, is similar to Alternative 2, but it proposes a 200-foot extension of Runway 9-27 to the west to a total length of 5,275 feet and the construction of a new EMAS bed beyond the Runway 27 end. The proposed EMAS would provide a level of overshoot/overrun safety equivalent to a standard RSA. This alternative may require the acquisition of property north of the proposed EMAS to satisfy the ROFA requirements associated with the extended runway. When compared to Alternative 2, however, the proposed EMAS would eliminate impacts to Florida State Route A1A and the Atlantic Ocean. The extension of the runway by 200 feet to the east would also allow for the construction of a bypass taxiway to help mitigate potential delay at the Runway 27 end. In this scenario, the Runway 27 RPZ would shift 200 feet to the east.

5.1.1.4 Alternative 4 – Convert Naval Air Station Key West into a Joint-Use Airport

Alternative 3, depicted on **Exhibit 5.1-4**, proposes the conversion of Naval Air Station Key West (NQX), located on neighboring Boca Chica Key, from a military airport to a joint-use airport. NQX has three runways that could each accommodate the anticipated EYW aircraft fleet through the planning horizon: Runway 8-26 is 10,000 feet long by 200 feet wide and Runways 4-22 and 14-32 are 7,000 feet long by 150 feet wide. All the runway ends have at least one instrument approach procedure. The Joint-Use evaluation study that is included in **Appendix D** further defines the challenges to convert NQX to a joint-use airport.



SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., November 2016.

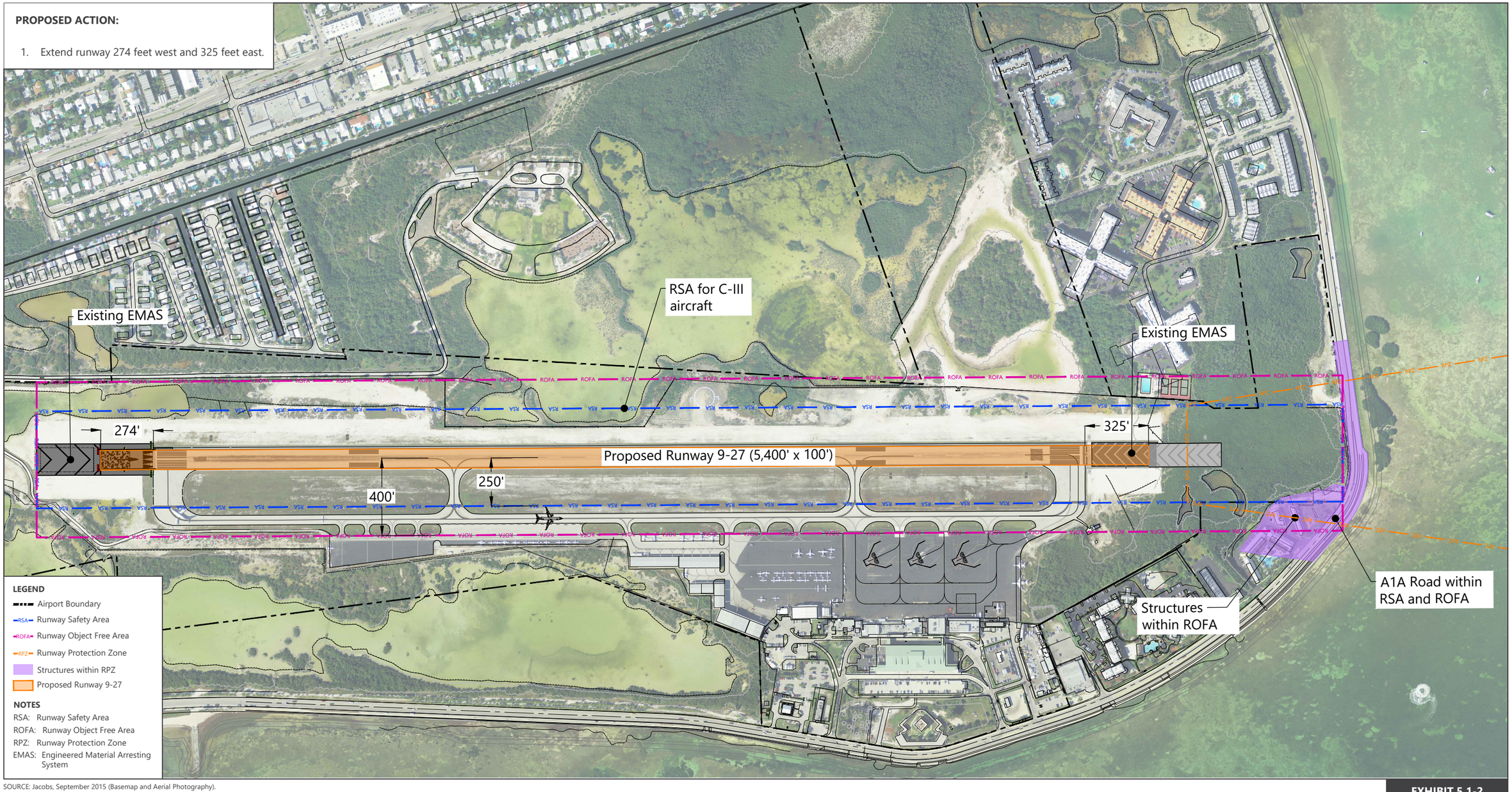
EXHIBIT 5.1-1

NORTH 0 550 ft.

Extend Runway to the West
Runway Extension - Alternative 1

PROPOSED ACTION:

1. Extend runway 274 feet west and 325 feet east.



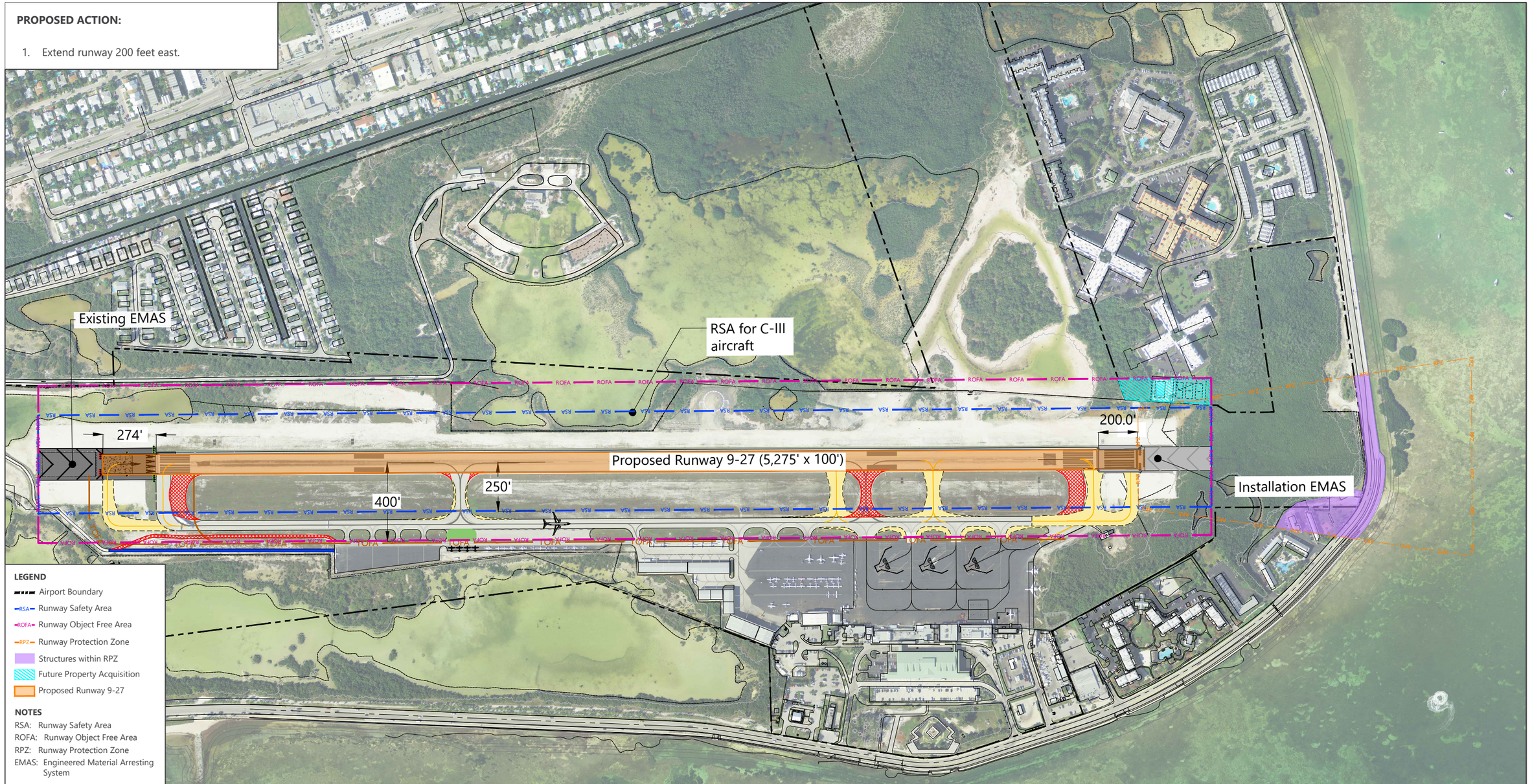
SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., November 2016.

EXHIBIT 5.1-2

Extend Runway to the East
Runway Extension - Alternative 2

PROPOSED ACTION:

1. Extend runway 200 feet east.



SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., November 2016.

EXHIBIT 5.1-3

NORTH 0 500 ft.

Extend Runway to the East
Runway Extension - Alternative 3

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\206 - Alternatives\Airfield\CAD\Exhibit 5.1-3_Runway Extension Alternative 3.dwgLayout: 5.1.3 Plotted: Mar 5, 2019, 04:29PM

PROPOSED ACTION:

1. Relocate airport operations to Naval Air Station Key West.



SOURCE: Esri, Digital Globe, GeoEye, et al., 2016 (Aerial Imagery - may not be to scale, for visual reference only).
PREPARED BY: Ricondo & Associates, Inc., November, 2016.

EXHIBIT 5.1-4

NORTH 0 2,000 ft.

Runway Extension
Alternative 4

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\206 - Alternatives\Airfield\CAD\Exhibit 5.1-4_Runway Extension Alternative 4 (NAS).dwgLayout: 5.1.4 Plotted: Mar 6, 2019, 11:06AM

5.1.1.6 Preferred Alternative

Although extending Runway 9-27 to 5,400 feet in length, as described for Alternatives 1 and 2, meets the runway length determination, these alternatives are not practical from an environmental, constructability, or financial standpoint. These alternatives also create new incompatible land uses in the RPZ. Alternative 3, which provides for the extension of the runway by 200 feet while minimizing impacts to the environment and surrounding land uses by providing an EMAS in lieu of a standard RSA, is the preferred development concept.

In the future, as commercial passenger traffic continues to increase and the requirements to establish a joint-use agreement become better defined, consideration will be given to converting Naval Air Station Key West, from a military airport to a joint-use airport (Alternative 4).

5.1.2 RUNWAY SAFETY AREA

The presence of wetlands and salt ponds precludes the existing RSA from meeting FAA lateral dimensional standards. To assist the FAA Orlando Airports District Office (ADO) with making an informed decision as part of its RSA Determination[1] process, a report was prepared to identify existing RSA deficiencies at EYW, as well as to evaluate various RSA improvement alternatives.[2] The RSA mitigation alternatives considered were:

- No Action Alternative
- Alternative 1 – Full Runway Safety Area Compliance
- Alternative 2 – Full-Length Widening of Runway Safety Area South and Partial-Length North
- Alternative 3 – Partial-Length Runway Safety Area Widening South and North
    - Alternative 4 – Partial-Length Runway Safety Area Widening South

The available RSA is 400 feet wide (200 feet on either side of the Runway 9-27 centerline, except for approximately 2,000 feet at the center of the runway, where it is only 350 feet wide). Per FAA AC 150/5300-13A, *Airport Design*, the RSA for C-III aircraft should be 500 feet wide.

The No Action Alternative would essentially consist of maintaining the status quo with the current available RSA width. The proposed RSA transverse grade, however, would be improved to provide a 1.5-inch drop between the runway shoulder and the grassed safety area, a continuous RSA transverse grade of 0.8 percent beyond the pavement edge south of Runway 9-27, and a continuous RSA transverse grade of 1.5 to 3.0 percent beyond the pavement edge north of Runway 9-27. These improvements would bring the overall RSA condition closer to compliance with FAA standards.

To achieve full compliance with FAA standards (Alternative 1), existing wetlands and salt ponds would need to be filled in and graded to increase the RSA width. This would trigger the need for various environmental reviews to analyze and disclose the potential impacts prior to construction. These improvements would require lengthy permitting processes, wetland mitigation, mangrove tree removal, and the development of a multiyear

[1] Per FAA Order 5200.8, *Runway Safety Area Program*.

[2] Ricondo & Associates, Inc., *DRAFT Key West International Airport, Runway Safety Area Determination Supporting Documentation*, March 2017.

monitoring plan to document wetland mitigation success. Full compliance would also require the runway to be raised by 28 inches to meet FAA transverse grade requirements. However, development costs to achieve full RSA compliance are not considered financially viable.

Since increasing the elevation of the runway to meet FAA transverse grade requirements is not considered financially viable, all other options assume the approval of the Modification of Standards (MOS) request for the RSA transverse grade that was submitted by the BOCC in February 2017. Alternatives 2 and 3 both propose extending the RSA to the south, while also improving areas north of Runway 9-27. Alternative 4 proposes widening the RSA to the south only. These alternatives would require various levels of wetland mitigation, earth fill to bring the RSA to grade, and tree/vegetation clearing.

Considering the research and analyses completed as part of the Runway Safety Area Determination, and due to the extent of operational and/or cost implications, the No Action Alternative is the BOCC's preferred alternative. The following is a summary of the reasons that support this decision:

- The EMAS beds installed beyond the runway ends provide a level of safety equivalent to a standard RSA; as such, the RSA meets FAA longitudinal dimensional standards.
- Data on historical landing and takeoff veer-off accidents show that an aircraft veering off a runway is most likely to remain within 100 feet of the runway edge (or 150 feet from the runway centerline, assuming a 100-foot-wide runway). Thus, an aircraft veering off the runway at EYW is most likely to remain within the available RSA.
- Impacts to existing wetlands and salt ponds would trigger the need for various environmental reviews, wetland mitigation, and the development of a multiyear monitoring plan to document wetland mitigation success. Clearing mangrove trees would also require environmental mitigation. Complying with National Environmental Protection Agency (NEPA) regulations has become extremely lengthy, and this could postpone any proposed RSA improvement projects for many years.
- Construction work within the RSA would require the closure of the runway, resulting in significant operational impacts.
    - Considering the variability of aircraft veer-off events and locations, partial improvements to the RSA would provide limited safety benefits. Achieving full compliance, however, is not considered financially viable.

5.1.3 RUNWAY OBJECT FREE AREA

For runways serving Approach Category C aircraft, ROFAs must be 800 feet wide (i.e., 400 feet on either side of the runway centerline). The ROFA is a rectangular area centered on the runway centerline; it is required to be clear of objects protruding above the RSA edge elevation, except for those objects that are essential to air navigation or aircraft ground maneuvering. Objects that are nonessential for either air navigation or aircraft ground maneuvering are not permitted within the ROFA. At EYW, however, several objects/structures are currently located inside the standard ROFA. These objects include a section of service road located near the Runway 9 end, a section of AOA fence along the north boundary of the Airport, a private swimming pool and

tennis courts adjacent to the northeast corner of the Airport, and a former National Weather Service (NWS) Balloon Launch Facility located south of the Runway 27 end.

Based on the unique local conditions, Monroe County believes the existing ROFA penetrations do not adversely impact the Airport's ability to safely accommodate the existing and future aircraft fleet mix at the Airport. Given the costs of improvements to comply with the FAA ROFA requirements, the BOCC believes that a MOS request warrants consideration. The following is a summary of the reasons that support a MOS request to allow object penetrations to the Runway 9-27 ROFA at the Airport:

- Aircraft Operations:
  - The Airport has been serving C-III aircraft since 2002. Since then, no accidents at the Airport have been attributed to the objects penetrating the standard C-III ROFA. The only recorded incident involved a Piper PA31 (A-I aircraft), which experienced a landing gear collapse during landing, resulting in the aircraft veering off the runway after hitting a runway light.[3,4]
  - At the Airport, 98.9 percent of aircraft operations occur in VMC, allowing pilots to fly while maintaining visual separation from terrain and other aircraft.
  - Operations by aircraft that fall into Approach Category C only accounted for 18.0 percent of all Airport operations in CY 2016. Of these, 83.0 percent were conducted by air carriers (Part 121 operators). Accidents by air carrier operators only represent 1.6 percent of all aircraft accidents that have been reported by the National Transportation Safety Board (NTSB) since 1983.
- Airspace Surfaces:
  - At the Airport, the 14 CFR Part 77 primary surface is 500 feet wide, which is consistent with the ROFA dimensions for A-I, B-I, A-II, and B-II aircraft (the majority of aircraft that operate at EYW).
  - The OFZ remains clear of obstacles, except for a section of the AOA fence along the north side of the runway.
  - None of the objects that penetrate the ROFA lie within the footprint of the instrument departure surface.
  - None of the objects that penetrate the ROFA encroach the missed approach surfaces.
- Risk Analysis:
  - Based on the location of the ROFA penetrations, the likelihood of a collision in the event that an aircraft veers off the runway during the landing roll out or takeoff roll is either remote or extremely remote. As such, the existing ROFA penetrations do not warrant any restrictions or operational limitations.

[3] Transportation Research Board, ACRP Report 51, *Risk Assessment Method to Support Modification of Airfield Separation Standards*, 2011.

[4] Federal Aviation Administration, *Accident and Incident Data System (AIDS)*, http://www.asias.faa.gov/pls/apex/f?p=100:11:0::NO (accessed February 7, 2017).

- The sections of AOA fence that are the closest to the runway represent a risk that is higher than 1 in 10 million operations, but lower than 1 in 100,000. The highest risk of collision if an ADG III aircraft veers off the runway during the landing roll out is 1 in 4.0 million landings.
- When an ADG III aircraft completes its landing roll out on Runway 9-27, the private swimming pool and tennis courts represent a risk that is higher than 1 in 10.0 million operations, but lower than 1 in 100,000. The risk of collision if an ADG III aircraft veers off the runway during the landing roll out is 1 in 7.7 million landings.
- All other penetrations to the ROFA represent a risk that is lower than 1 in 10 million operations.

A MOS request is currently under review by the FAA to modify the C-III ROFA to allow the Airport security fence, service road, Airport storage building, and private swimming pool/tennis courts to remain within the ROFA. In addition, the Airport staff is taking proactive steps to address the object free area penetrations as discussed below:

Airport Service Road:

As an interim mitigation, the Sponsor has proposed to enforce the following procedures:

- Aircraft Design Group III and/or Approach Category C Operations on Runway 9-27:
  - All vehicles are required to contact Air Traffic Control prior to entering the ROFA.
  - No vehicles shall operate on the service road while aircraft Design Group III and/or Approach Category C operate on Runway 9-27.
  - Vehicles may operate on the service road while aircraft Design Group II and/or Approach Category B operate on Runway 9-27 after obtaining clearance to enter the ROFA from Air Traffic Control.
  - No vehicles shall operate on the service road while aircraft operate on Taxiway A.
- Vehicle on Non-Public Service Road:
  - No commercial aircraft shall arrive or depart on Runway 9-27 while a vehicle is operating on the service road.

The Sponsor also proposes the service road to be relocated outside of the Taxiway OFA in the short-term future. To initiate this process, the Airport will complete an environmental assessment in CY2019 that will include the relocation of the service road.

Existing Fence on the North Side of the Airport:

To the extent practical (considering the existing environmental constraints), the existing fence will be relocated outside the OFA. To initiate this process, the Airport will complete an environmental assessment in CY2019 that will include the relocation of the existing fence.

Former NWS Weather Balloon Facility:

The former NWS Weather Balloon facility will be demolished in CY2019 as part of the taxiway pavement rehabilitation project.

Tennis Court and Swimming pool:

As noted in the FAA's comments received on October 17, 2018, the aircraft vertically clears the tennis court and swimming pool within the C-III standard ROFA. "Therefore, this becomes an acceptable mitigation for FAA acceptance." Ultimately, the land parcels where the swimming pool and tennis court are located will be acquired when the runway is ultimately relocated to meet ADG III runway to taxiway separation distance.

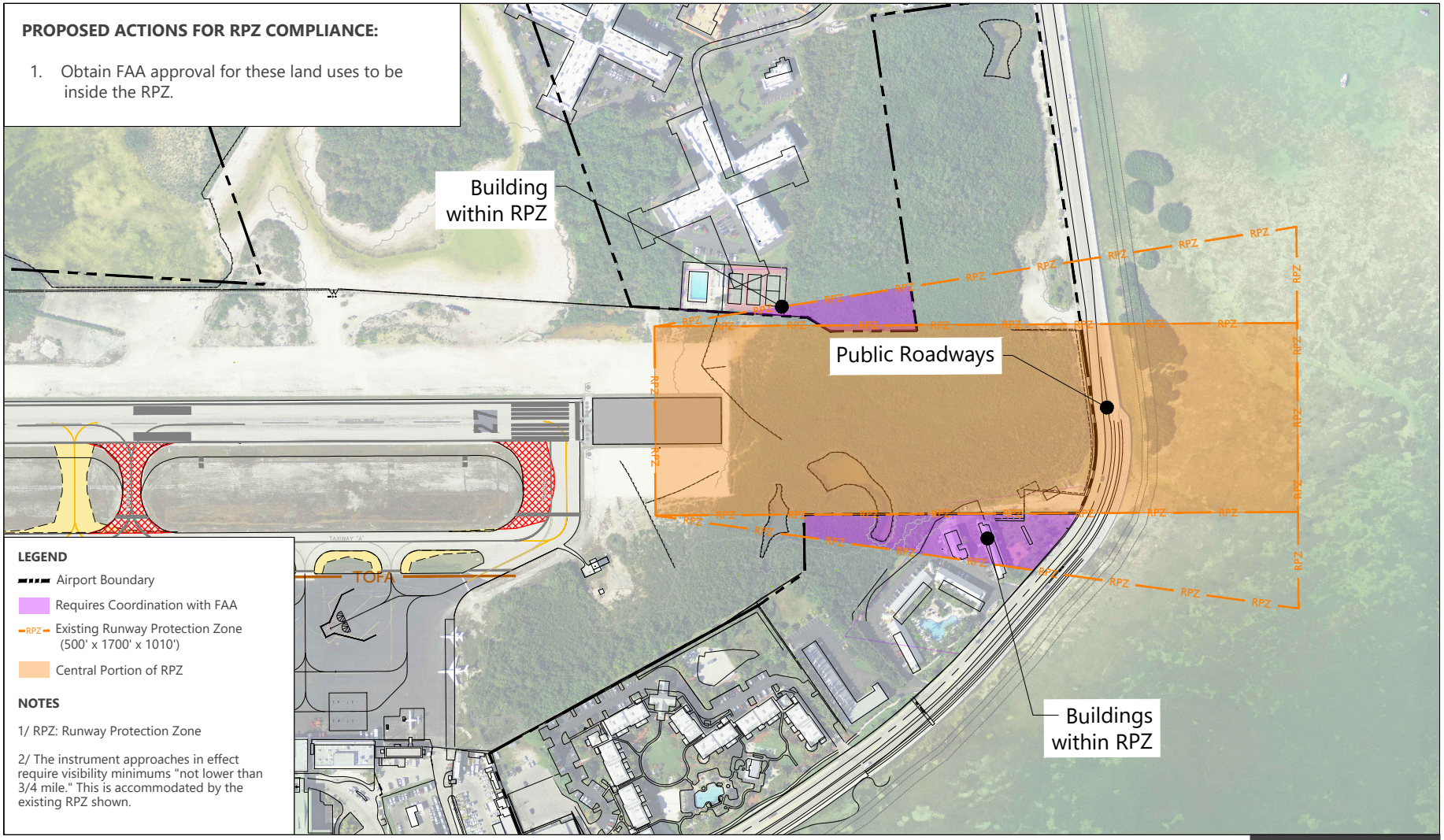
5.1.4 RUNWAY PROTECTION ZONES

During the development of this MPU, the instrument approach procedure to Runway 27 was updated by the FAA to lower the visibility minimum from 1.0 statute mile (sm) to 0.75 sm. A lower approach visibility minimum requires a larger RPZ, which increases in size from 29.47 acres to 49.98 acres. The larger RPZ encompassed several incompatible land uses, including a residential tower, a hotel, and approximately 300 additional linear feet of roadway. At the request of Monroe County, the FAA has increased the approach visibility minimum back to 1.0 sm, which requires the smaller RPZ. The approach visibility minimums to Runway 9-27 should remain 1.0 sm throughout the planning horizon and beyond to prevent the introduction of additional incompatible land uses.

It is recommended that Monroe County pursue the acquisition of properties not currently under County control by fee-simple acquisition or through an avigation easement. **Exhibit 5.1-5** depicts the RPZs and the existing property line.

5.1.5 RUNWAY-TO-TAXIWAY SEPARATION

The existing runway centerline to taxiway centerline separation distance does not meet FAA standards. Several mitigation alternatives were developed and are described in the following subsections. A preferred alternative was selected through the evaluation of each alternative's impacts.



SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc. October, 2016.

EXHIBIT 5.1-5

NORTH 0 400 ft.

Runway Protection Zones

5.1.5.1 No Action Alternative

The No Action Alternative, depicted on **Exhibit 5.1-6**, proposes to maintain the existing conditions, as it would be impractical to relocate Taxiway A. Based on the low occurrence of operations by aircraft with wingspans over 100 feet, the low risk of a collision, the anticipated aircraft fleet mix, and the lack of incident or accidents involving aircraft taxiing on Taxiway A and aircraft operating on Runway 9-27 at EYW, a MOS is requested allowing the non-standard runway-to- taxiway separation.

5.1.5.2 Alternative 1 – Shift Taxiway A South

Alternative 1, depicted on **Exhibit 5.1-7**, proposes shifting Taxiway A 86 feet south to meet the current runway-to-taxiway separation standard of 400 feet. As a result, a significant portion of the existing apron areas would become unusable.

5.1.5.3 Alternative 2 – Shift Runway North

Alternative 2, depicted on **Exhibit 5.1-8**, proposes to shift Runway 9-27 86 feet north to provide a 400-foot runway-to-taxiway separation. This would require significant grading and earthwork to fill in the salt ponds to meet RSA standards.

5.1.5.4 Preferred Alternative

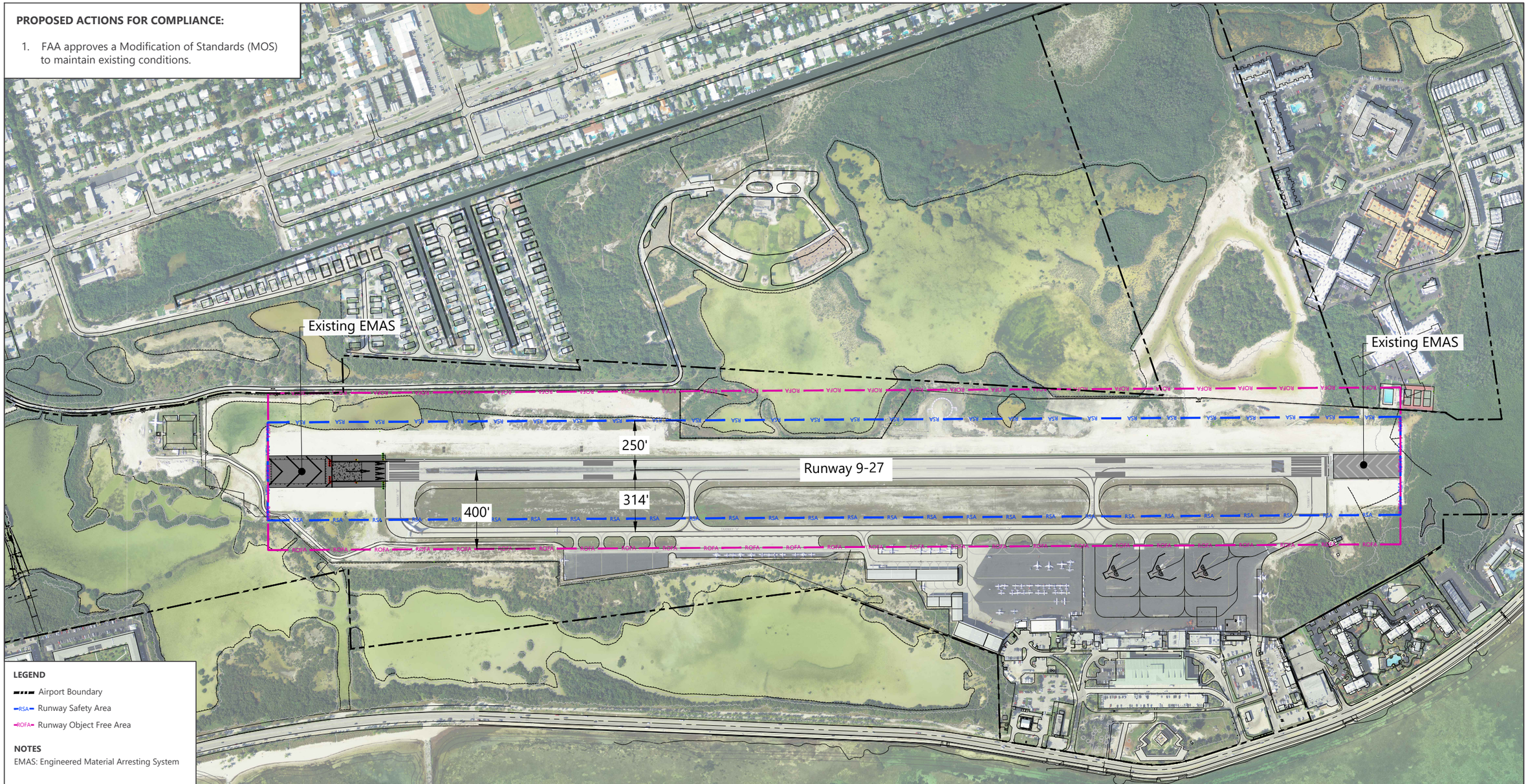
Alternative 2 is the preferred alternative because it would preserve the existing commercial ramp. However, until funding is available, the environmental process is completed, and mitigation plans are available to minimize impacts during and after construction, Monroe County will request to continue operating with the current runway-to-taxiway separation (No Action Alternative). To allow aircraft operations at the current runway-to-taxiway separation, a MOS request is currently under review by the FAA. Ultimately, when funding is available, Runway 9-27 will be shifted to the north to comply with Runway Design Code (RDC) C-III criteria.

The relocation of the runway to the north will require the following:

- Fill of salt ponds: To meet the RSA grading requirements, approximately 10 acres of existing inland salt ponds would need to be filled. Environmental mitigation would also be required.
- Property acquisition: To comply with design standards associated with the relocated runway, property would need to be acquired to allow the Airport to construct a RSA and control land uses within the ROFA and RPZ.
- Government Road relocation: The relocation of Runway 9-27 would require the realignment and/or closure of Government Road.
- Environmental impacts assessment: The FAA would be required to conduct an Environmental Impact Statement (EIS), in accordance with the National Environmental Policy Act (NEPA), to evaluate the potential direct, indirect, and cumulative environmental impacts that may result from the proposed runway relocation. The EIS would consider a range of reasonable alternatives that could potentially meet the purpose and need of the proposed project.
- Evaluation of airspace impacts: The relocation of Runway 9-27 would require the evaluation of potential impacts to flight procedures and aircraft operations, the assessment of obstructions in the approach/departure surfaces, and development and/or modification of associated arrival and departure procedures.

PROPOSED ACTIONS FOR COMPLIANCE:

1. FAA approves a Modification of Standards (MOS) to maintain existing conditions.



LEGEND

- Airport Boundary
- RSA - Runway Safety Area
- ROFA - Runway Object Free Area

NOTES

EMAS: Engineered Material Arresting System

SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., October 2016.

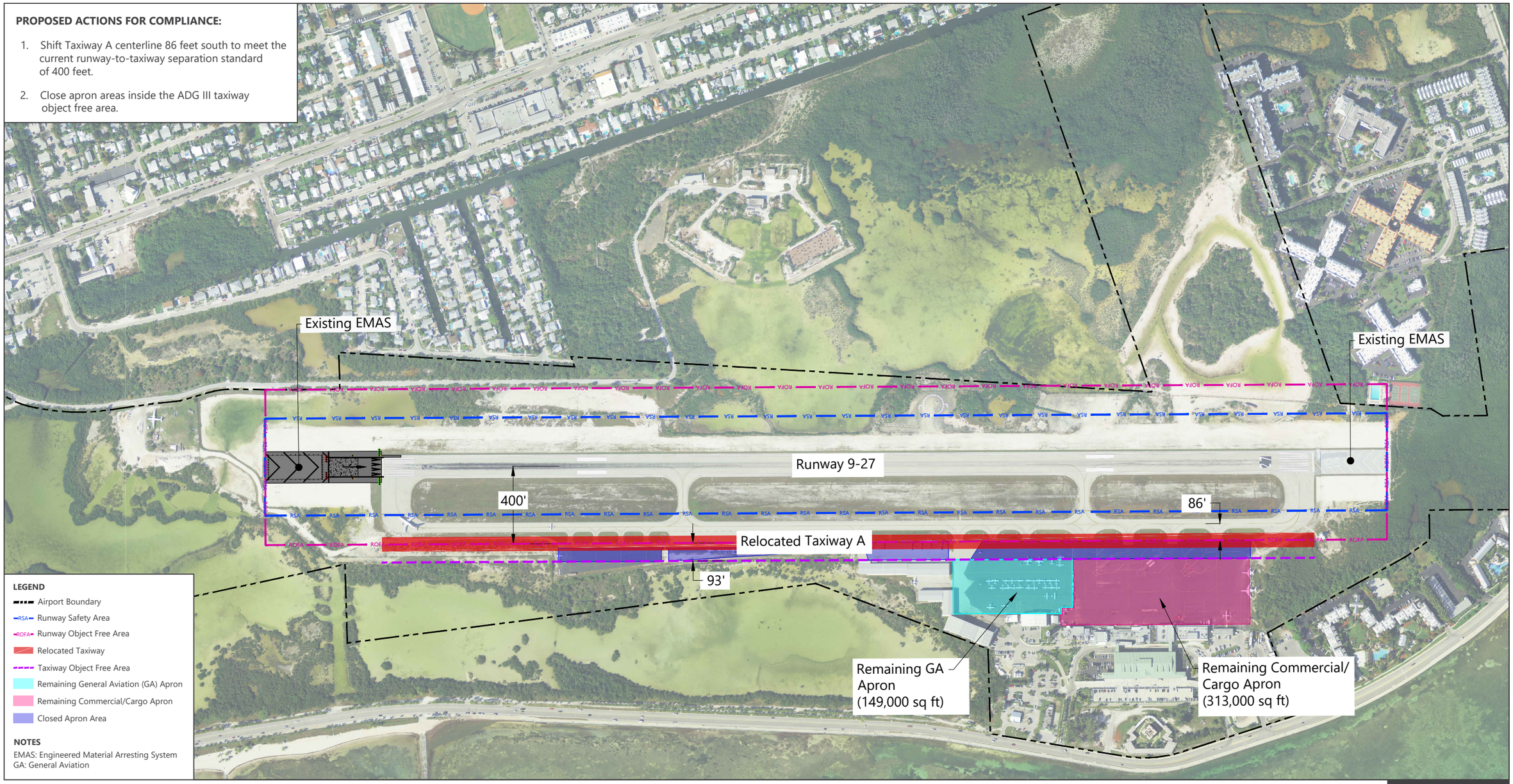
EXHIBIT 5.1-6

NORTH 0 500 ft.

Runway-to-Taxiway Separation - No Action Alternative

PROPOSED ACTIONS FOR COMPLIANCE:

1. Shift Taxiway A centerline 86 feet south to meet the current runway-to-taxiway separation standard of 400 feet.
2. Close apron areas inside the ADG III taxiway object free area.



SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., October 2016.

EXHIBIT 5.1-7

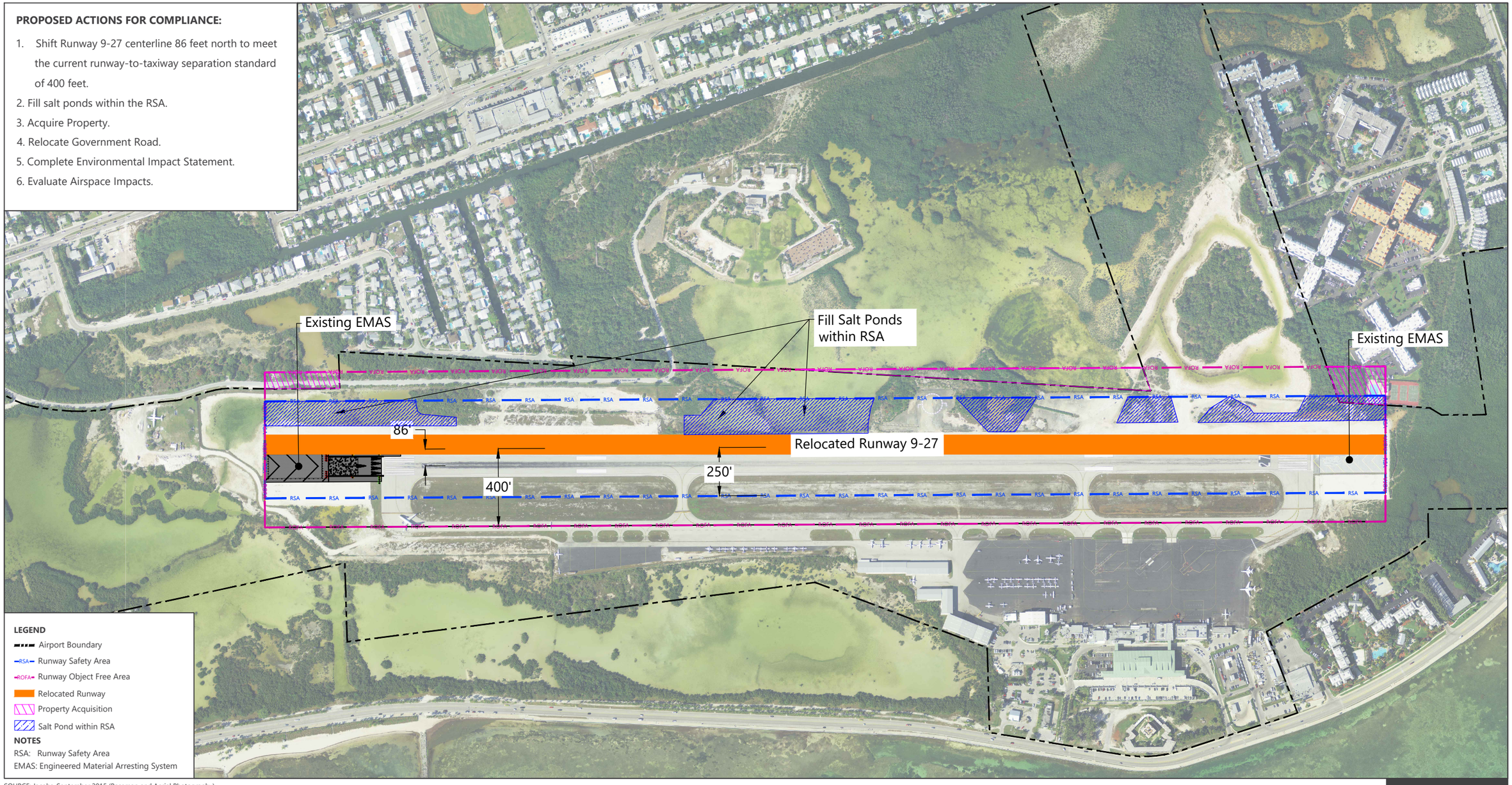
NORTH 0 500 ft.

Runway-to-Taxiway Separation
Alternative 1

Drawing: P:\Project-Chicago\EYW\2015 Master Plan\5-Alternatives\Airfield\CAD\Exhibit 5.1-6_Shift Taxiway South 20171201.dwgLayout: 5.1-6 Plotted: Mar 6, 2019, 11:33AM

PROPOSED ACTIONS FOR COMPLIANCE:

1. Shift Runway 9-27 centerline 86 feet north to meet the current runway-to-taxiway separation standard of 400 feet.
2. Fill salt ponds within the RSA.
3. Acquire Property.
4. Relocate Government Road.
5. Complete Environmental Impact Statement.
6. Evaluate Airspace Impacts.



SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., October 2016.

EXHIBIT 5.1-8

NORTH 0 500 ft.

Runway-to-Taxiway Separation Alternative 2

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\206 - Alternatives\Airfield\CAD\Exhibit 5.1-7_Shift Runway North 20171201.dwgLayout: 5.1-8 Plotted: Mar 6, 2019, 02:48PM

- Taxiway improvements and EMAS installation: The existing taxiway connectors would need to be extended to support the relocated Runway 9-27 and EMAS would need to be installed at both ends of the relocated runway.

5.1.7 RUNWAY 9 END EXTENSION ACCESS

Taxiway A is proposed to be extended west to provide full-length taxiway access to the extended Runway 9 end, as shown on **Exhibit 5.1-9**. This taxiway extension would require the relocation of the service road south of Taxiway A and the filling of some salt ponds.

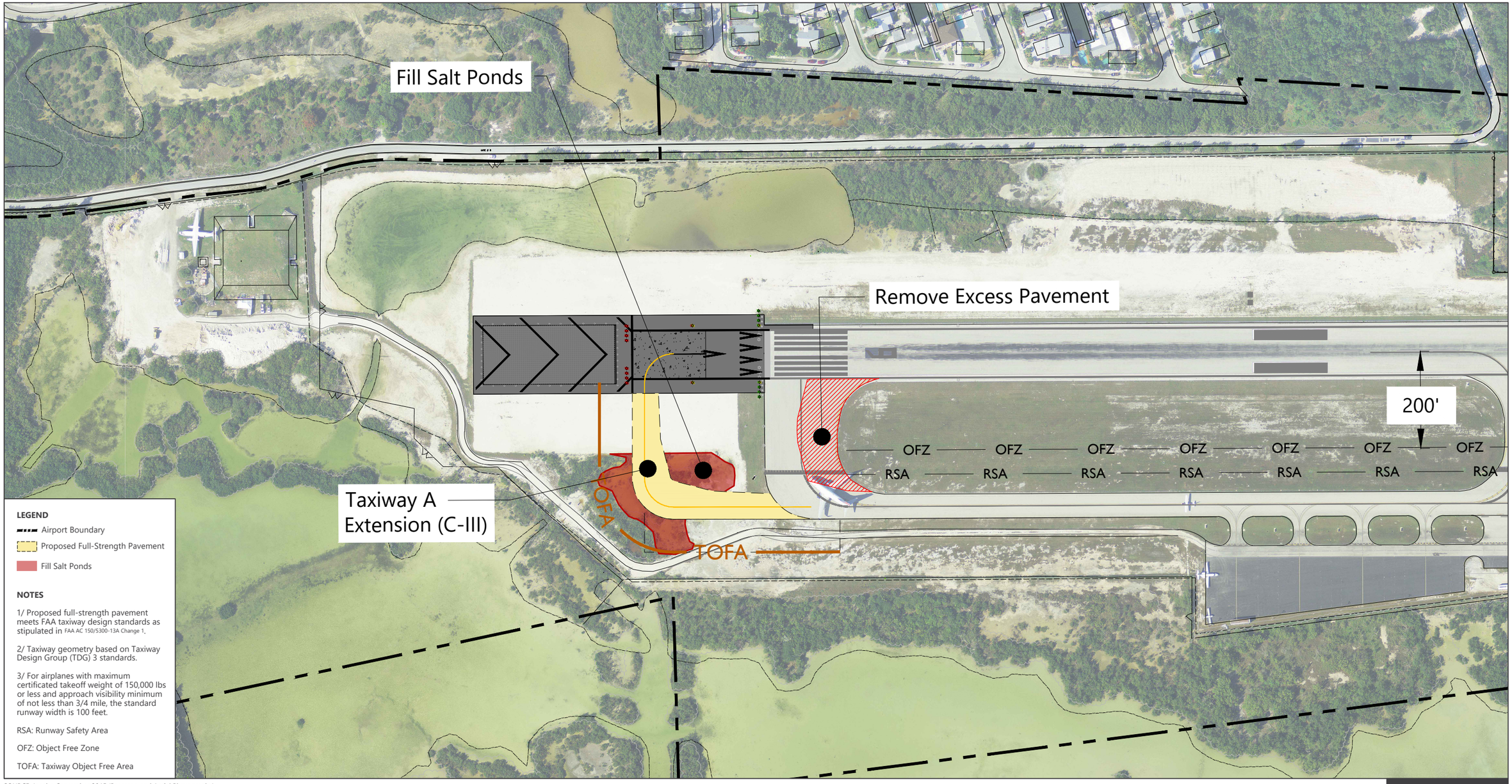
5.1.8 RUNWAY 27 END EXTENSION ACCESS

Taxiway A is proposed to be extended east to provide full-length taxiway access to the extended Runway 27 end, as shown on **Exhibit 5.1-10**. In addition, a bypass taxiway is proposed to help mitigate potential delay at the Runway 27 end.

5.1.9 AIRFIELD GEOMETRY COMPLIANCE

Based on the areas of airfield geometry noncompliance identified in Section 4, the following improvements are proposed and illustrated on **Exhibit 5.1-11**:

- Area 1 – increase runway shoulders' width from 10 feet to 20 feet
- Area 2 – obtain MOS for nonstandard runway-to-taxiway separation (currently 315 feet instead of 400 feet)
- Area 3 – obtain RSA Determination from FAA, allowing existing conditions to remain (RSA width less than 500 feet)
- Area 4 – widen Taxiway A connectors into apron to allow cockpit-over-centerline taxiing
- Area 5 – remove excess pavement on Taxiway B
- Area 6 – install a no-taxi island south of Taxiway C to prevent direct access from the apron to the runway
- Area 7 – do nothing (Per the FAA ADO, since no operational issues were identified nor runway incursions recorded at Area 7, mitigating this direct access from the apron to the runway is not a priority, and Taxiway D may remain in its current location. If issues arise and mitigation is needed in the future, then the proposed connector closest to the runway end would be the preferred alternative.
- Area 8 – remove excess pavement on Taxiway E
- Area 9 – relocate the existing service road outside the Taxiway A object free area
- Areas 10/11 – extend Runway 9-27 by 200 feet to the west, install a new EMAS beyond the extended runway end, and construct a bypass taxiway to help mitigate potential delay at the Runway 27 end



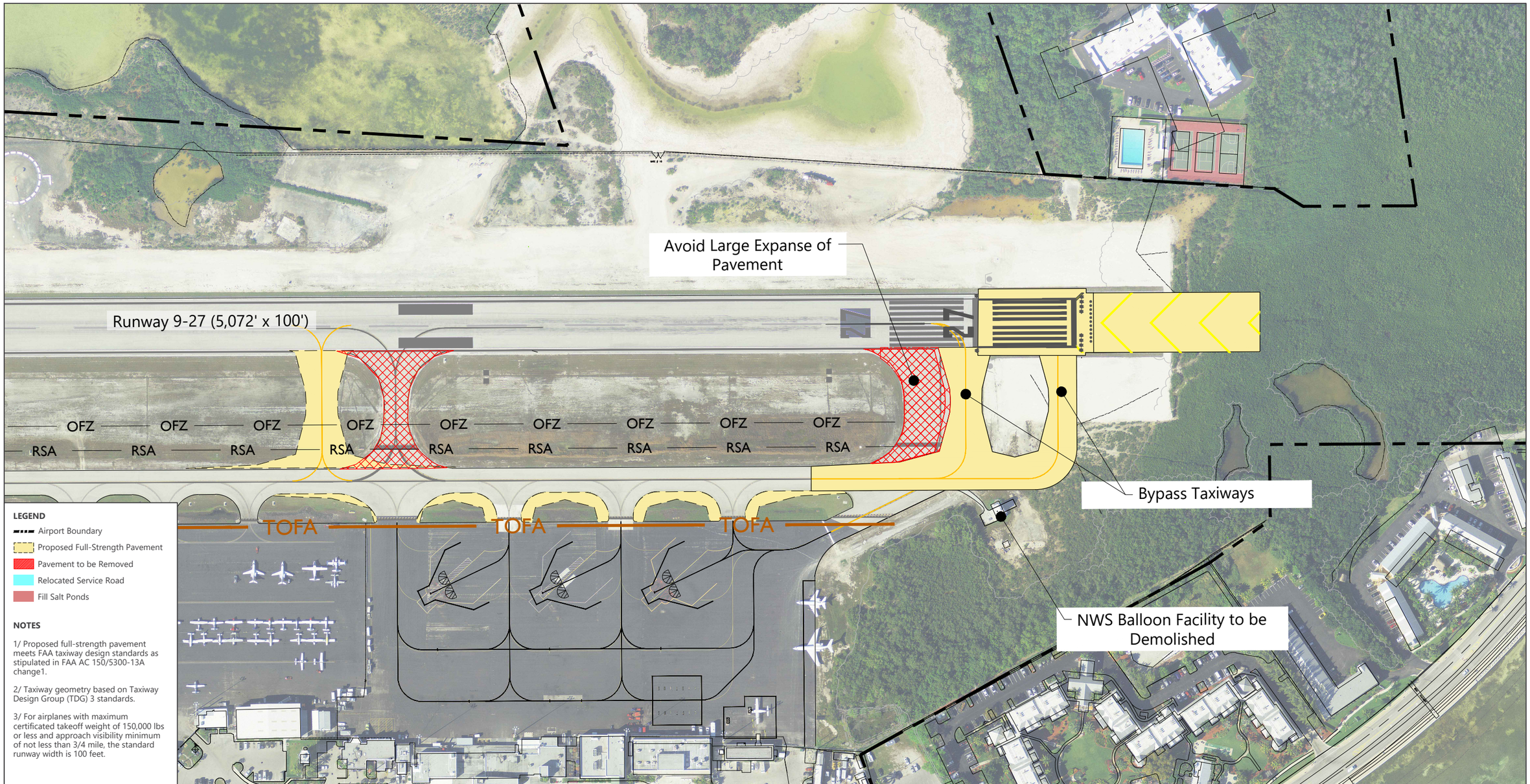
SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., November 2016.

EXHIBIT 5.1-9

NORTH 0 200 ft.

Runway 9 End Extension
Access Improvements

Drawing: P:\Project-Chicago\EYW\2015 Master Plan\5-Alternatives\Airfield\CAD\Exhibit 5.1-8_Access to 9 End 20171201.dwgLayout: 5.1-8 Plotted: Mar 6, 2019, 11:44AM



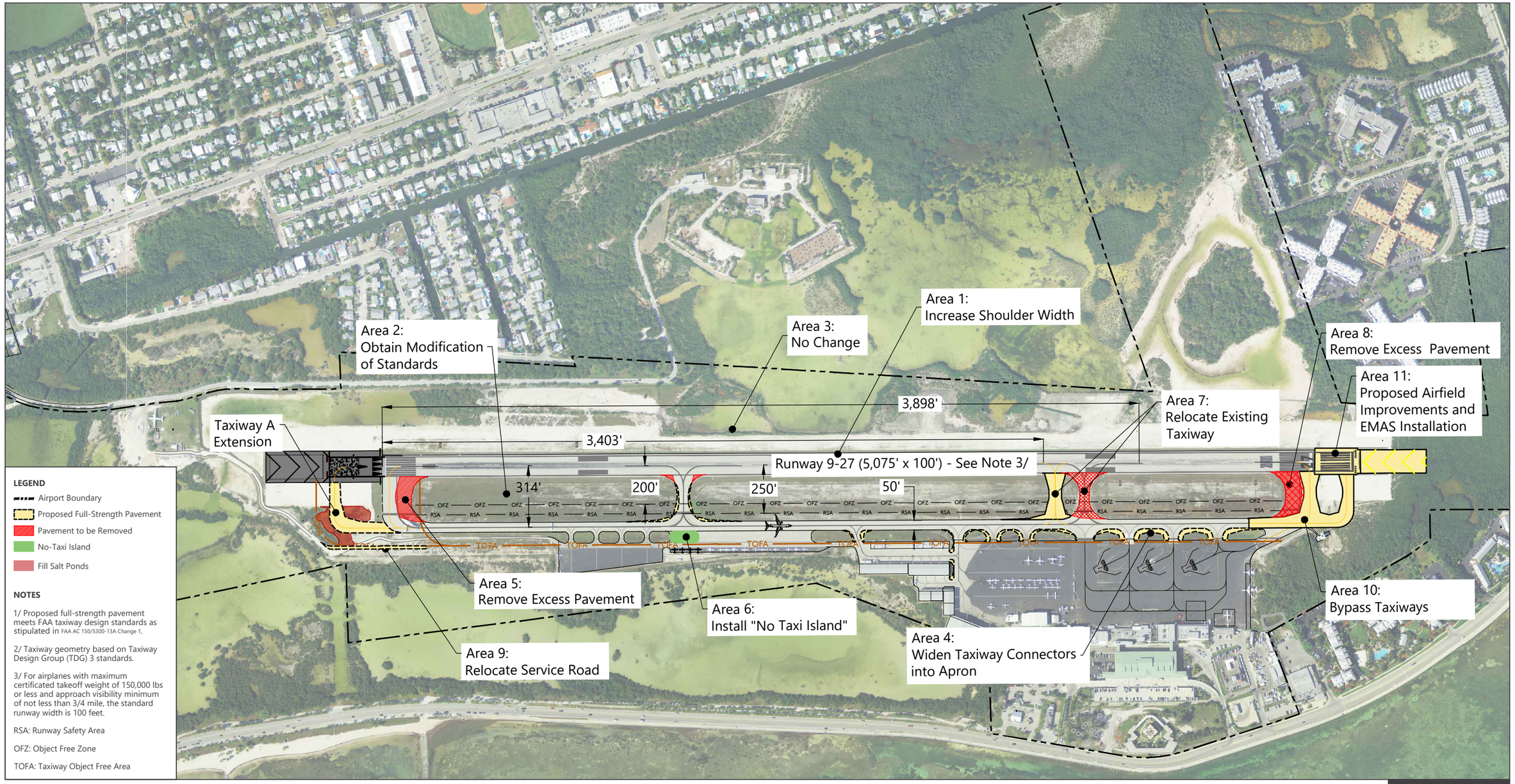
SOURCE: Basemap and Aerial Photography, Jacobs, September, 2015
PREPARED BY: Ricondo & Associates, Inc., November, 2016.

EXHIBIT 5.1-10

NORTH 0 200 ft.

Access Improvements to Runway 27 End

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\206 - Alternatives\Airfield\CAD\Exhibit 5.1-X_Access to 27 End.dwgLayout: 5.1.13 Plotted: Mar 6, 2019, 11:48AM



SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., November 2016.

EXHIBIT 5.1-11

NORTH 0 500 ft.

Airfield Geometry Improvements

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\206 - Alternatives\Airfield\CAD\Exhibit 5.1-11_Proposed AF Geometry Improvements-20171201.dwgLayout: 5.1-11 Plotted: Mar 20, 2019, 01:49PM

5.2 Passenger Terminal/Aircraft Apron Facilities

This section discusses passenger terminal development alternatives that would address the requirements identified in Section 4. The following is a summary of these terminal facility requirements, as organized by functional element:

- **Check-in facilities**: The check-in facility can accommodate demand levels beyond the 2035 DDFS requirements.
- **Passenger security screening checkpoints**: Passenger security screening checkpoint lanes can accommodate passenger demand levels forecast in the 2015 and 2020 DDFS. Between 2020 and 2025, an additional lane is required.
- **Holdrooms**: The current holdroom areas are deficient at today's passenger levels.
- **Apron**: Based on the 2035 DDFS, during peak activity, a total of five gates are required, including:
  - two aircraft parking positions capable of accommodating narrowbody aircraft (e.g., Boeing 737-700W)
  - one aircraft parking position capable of accommodating large regional aircraft (e.g., Embraer 175)
  - two aircraft parking positions capable of accommodating turboprop aircraft (e.g., ATR 42)

  The commercial apron must also accommodate up to seven RON aircraft, either at the terminal or at remote parking positions, including:

  - one aircraft position capable of accommodating large regional aircraft (e.g., Embraer 175)
  - one aircraft position capable of accommodating regional aircraft (e.g., CRJ 700)
  - five aircraft parking positions capable of accommodating turboprop aircraft (e.g., ATR 42)

  The possibility of direct docking to aircraft parked at or near the terminal using passenger boarding bridges was considered in the development of the commercial apron alternatives. As such, the terminal alternatives propose utilizing passenger boarding bridges to enhance the passenger experience.

- **Outbound baggage makeup**: The outbound baggage makeup carousel has sufficient length and capacity for all DDFS demand levels. However, additional area for physical cart staging will be required after 2020.
- **Domestic baggage claim**: The current domestic baggage claim retrieval area is deficient, and the existing devices are undersized to support future planned aircraft.
- **Commercial areas**: Commercial areas require modernization, with potential relocation/expansion into the new holdroom areas.
- **Restrooms**: The restroom facilities are adequate through the planning horizon.

Following input from the TRC, the passenger terminal development alternatives were narrowed to two alternatives: Alternatives 1 and 2. These were shortlisted due to their moderate impacts to the aircraft apron:

- Alternative 1 proposes to construct a new concourse to the north of the existing facility on the existing apron.
- Alternative 2 proposes to construct a new concourse as a second floor above the existing terminal, resulting in a smaller impact to the apron.

Both alternatives are connected to the existing facility via the current departure bridge, and they both retain use of the vertical circulation core. The Arrivals Hall would be reconfigured, and a new domestic bag-claim device would be added to improve the LOS. The following subsections provide an overview of each passenger terminal alternative.

5.2.1 ALTERNATIVE 1

Exhibit 5.2-1 depicts the proposed Alternative 1 apron layout. **Exhibit 5.2-2** and **Exhibit 5.2-3** depict the corresponding proposed terminal layouts. Exhibit 5.2-2 provides an overview of the passenger terminal second floor, including the existing Departures Hall and the proposed terminal expansion above the existing apron. Exhibit 5.2-3 provides an overview of the passenger terminal first floor, including the existing Arrivals Hall and its proposed improvements.

The following subsections provide an overview of each functional element of Alternative 1.

5.2.1.1 Apron

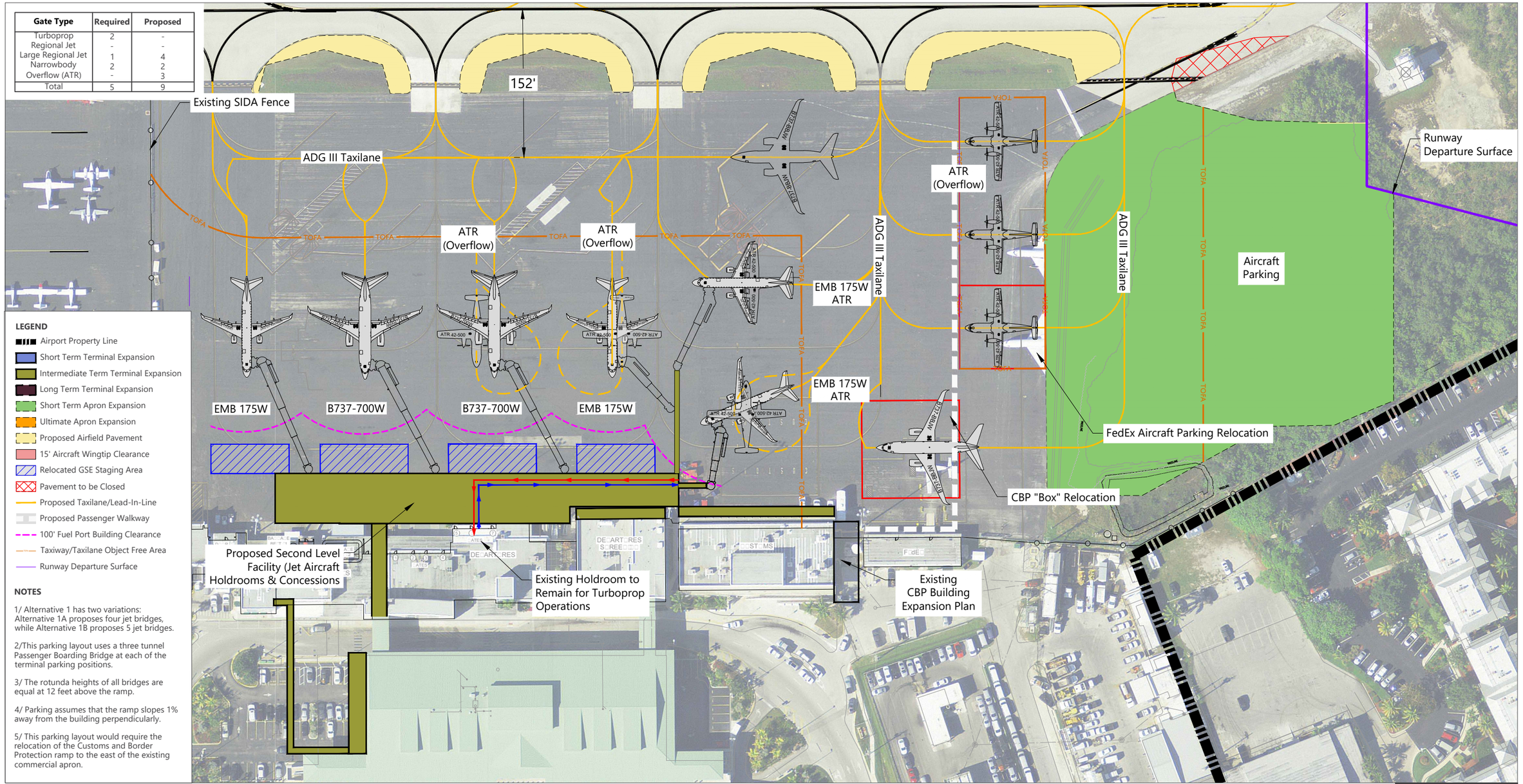
Alternative 1 proposes an expansion of the terminal to accommodate aircraft directly at or near the terminal via passenger boarding bridges. This alternative provides a total of six jet aircraft parking positions at the terminal and three remote power-in/power-out turboprop/regional jet positions, accessible via enclosed walkways, for a total of nine aircraft parking positions at or near the terminal. When not being utilized by jet aircraft, two of the aircraft positions at the terminal facing south would accommodate independent power-in/power-out turboprop operations. Alternative 1 would satisfy the 2035 DDFS gate and remain overnight (RON) requirements and would provide the opportunity for future expansion of the terminal, if needed to accommodate additional aircraft.

Any future expansion of the terminal building to the east would result in an additional displacement of aircraft parking positions and an additional apron expansion to the east to accommodate the impacted parking positions and other on-Airport facilities that require direct access to the apron, including the CBP facility.

5.2.1.2 Check-in Facilities

The current check-in facilities, depicted on Exhibit 5.2-2, are sufficient to accommodate passenger demand levels though the planning horizon (2035). However, to modernize the process, additional kiosks would be needed. There is adequate space within the existing check-in hall to accommodate the 14 total kiosks required by 2035. These kiosks could be remote self-service common-use devices open to passengers of any airline, or they could replace in-line counter positions and remain staffed by airline agents.

Gate Type	Required	Proposed
Turboprop	2	-
Regional Jet	-	-
Large Regional Jet	1	4
Narrowbody	2	2
Overflow (ATR)	-	3
Total	5	9



LEGEND

- Airport Property Line
- Short Term Terminal Expansion
- Intermediate Term Terminal Expansion
- Long Term Terminal Expansion
- Short Term Apron Expansion
- Ultimate Apron Expansion
- Proposed Airfield Pavement
- 15' Aircraft Wingtip Clearance
- Relocated GSE Staging Area
- Pavement to be Closed
- Proposed Taxilane/Lead-In-Line
- Proposed Passenger Walkway
- 100' Fuel Port Building Clearance
- Taxiway/Taxilane Object Free Area
- Runway Departure Surface

NOTES

1/ Alternative 1 has two variations: Alternative 1A proposes four jet bridges, while Alternative 1B proposes 5 jet bridges.

2/This parking layout uses a three tunnel Passenger Boarding Bridge at each of the terminal parking positions.

3/ The rotunda heights of all bridges are equal at 12 feet above the ramp.

4/ Parking assumes that the ramp slopes 1% away from the building perpendicularly.

5/ This parking layout would require the relocation of the Customs and Border Protection ramp to the east of the existing commercial apron.

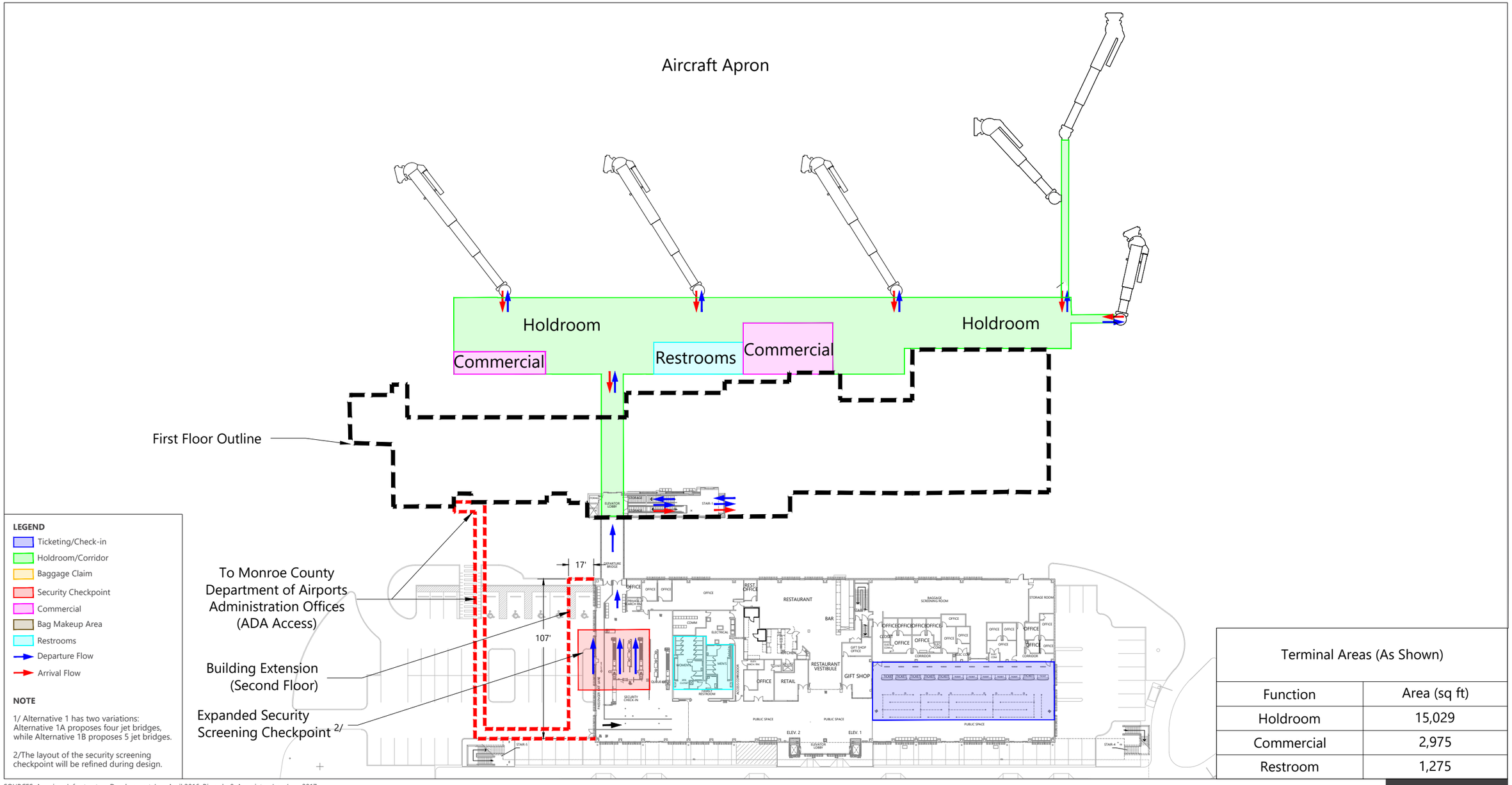
SOURCES: Monroe County Aviation Department, *Ameribridge Radial Drive PBB EYW Concepts*, September 2016; Ricondo & Associates, Inc., June 2017.
PREPARED BY: Ricondo & Associates, Inc., July 2017.

Exhibit 5.2-1

NORTH 0 100 ft.

Proposed Terminal Apron Layout
Alternative 1

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\206 - Alternatives\CAD\Commercial Apron_Alternative Extended Taxilane_20190206.dwgLayout: Long Term Plotted: Mar 19, 2019, 04:22PM



Terminal Areas (As Shown)	
Function	Area (sq ft)
Holdroom	15,029
Commercial	2,975
Restroom	1,275

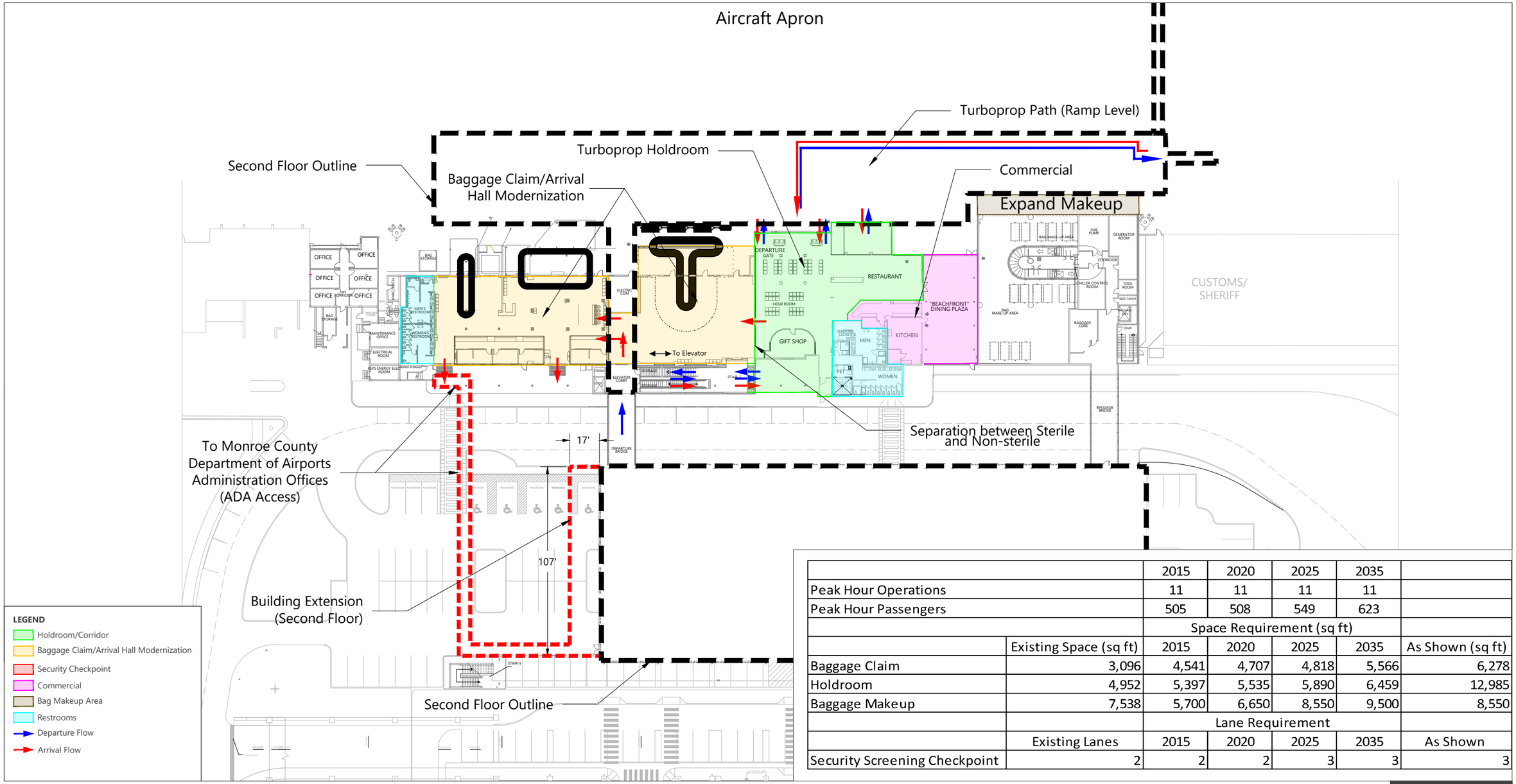
SOURCES: American Infrastructure Development, Inc., April 2016; Ricondo & Associates, Inc., June 2017.
PREPARED BY: Ricondo & Associates, Inc., July 2017.

EXHIBIT 5.2-2

NORTH 0 5 ft.

Proposed Terminal Layout
Alternative 1 Second Floor

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\206 - Alternatives\Terminal Alternatives\CAD\Terminal Alternative 4b-Upper_20170117.dwgLayout: 11X17 Plotted: Mar 20, 2019, 12:36PM



		2015	2020	2025	2035	
Peak Hour Operations		11	11	11	11	
Peak Hour Passengers		505	508	549	623	
		Space Requirement (sq ft)				
	Existing Space (sq ft)	2015	2020	2025	2035	As Shown (sq ft)
Baggage Claim	3,096	4,541	4,707	4,818	5,566	6,278
Holdroom	4,952	5,397	5,535	5,890	6,459	12,985
Baggage Makeup	7,538	5,700	6,650	8,550	9,500	8,550
		Lane Requirement				
	Existing Lanes	2015	2020	2025	2035	As Shown
Security Screening Checkpoint	2	2	2	3	3	3

SOURCES: American Infrastructure Development, Inc., April 2016; Ricondo & Associates, Inc., June 2017.
PREPARED BY: Ricondo & Associates, Inc., July 2017.

EXHIBIT 5.2-3

NORTH 0 55 ft.

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\206 - Alternatives\Terminal Alternatives\CAD\Terminal Alternative 4a-Lower_20171024.dwgLayout: 11X17 Plotted: Mar 20, 2019, 01:02PM

Proposed Terminal Layout
Alternative 1 First Floor

5.2.1.4 Passenger Security Screening Checkpoint

Alternative 1 proposes the construction of an 1,800-square-foot building extension to the west of the existing security checkpoint to contain the third checkpoint lane and to retain the exit lane corridor (depicted on Exhibit 5.2-2). This third lane should be capable of functioning either as a dedicated Pre✔ lane or a standard lane. The TSA has protocol to allow Pre✔ passengers to use standard lanes, which can be planned into the expansion. Additional reconfiguration or improvements of corollary space may be necessary to meet current TSA design guide requirements. This building extension would be raised on columns/stilts/pillars and would be open-air underneath.

5.2.1.5 Holdrooms

The following holdroom improvements, depicted on Exhibit 5.2-2, are proposed for Alternative 1:

- Second floor: A 7,100-square-foot dual holdroom configuration would be constructed to support larger aircraft, as depicted on Exhibit 5.2-2. This slightly exceeds the stated space requirements; however, it includes circulation space and queueing areas around agent podiums adjacent to the new passenger boarding bridge doors to alleviate potential conflicts in cross-circulation. The departure bridge would extend to the north beyond the vertical circulation core.
- First floor: Passengers traveling via turboprop aircraft would utilize the existing departures bridge and vertical circulation core to descend to the apron level, as depicted on Exhibit 5.2-3. Three doors in the north wall of the holdroom would continue to support three gates and a walkway on the apron to service ground-loaded aircraft.

5.2.1.6 Outbound Baggage Makeup Facilities

The existing outbound baggage makeup carousel has sufficient length and capacity to accommodate all DDFS demand levels. However, additional area for physical cart staging will be required after 2020. This expansion can be covered and unenclosed, and it is recommended to extend to the north of the existing makeup area, as depicted on Exhibit 5.2-3. To provide redundancy while the primary device is undergoing maintenance, a second outbound bag makeup device is also recommended in the intermediate/long-term.

5.2.1.7 Domestic Baggage Claim

Alternative 1 recommends the construction of a new domestic baggage claim device in the western portion of the existing holdroom, as depicted on Exhibit 5.2-3. The capacity of this device would be sufficient to support demand through the planning horizon. The existing devices in the Arrivals Hall would be retained and modernized for continued use during irregular operations.

Rental car counters currently operating out of the existing Arrivals Hall would be relocated to a consolidated rental car customer service area. The reclaimed area would enable the expansion of the waiting area in the Arrivals Hall for meeters and greeters. Windows could also be added in the Arrivals Hall to increase visual connections to the curb.

5.2.1.8 Commercial Areas

Concessions areas within the landside and airside of the passenger terminal would continue to operate from the existing kitchen; although, some equipment may need to be upgraded. The new commercial area adjacent

to the new holdroom could include a restaurant to replace the previous facility. Additional HVAC equipment would likely be required.

Rental car customer service counter improvements are also planned:

- In the short term, improvements would include right-sizing and modernizing the rental car customer service areas in the Arrivals Hall.
- In the long term, the rental car customer service counters may be relocated to a potential long-term consolidated rental car facility in a new two-level structure, which would be located where the existing 1-hour parking site is currently located.

5.2.1.9 Construction Phasing

The immediate action would be to construct a two-story facility with the second floor raised on columns, stilts, or pillars and open-air underneath. The second floor would encompass holdrooms, commercial area, and restrooms. This first phase would provide four passenger boarding bridges. A fifth jet bridge would be added during Phase 2, when necessary.

5.2.2 ALTERNATIVE 2

The proposed Alternative 2 apron layout is depicted on **Exhibit 5.2-4.** The corresponding proposed terminal layouts are depicted on **Exhibit 5.2-5** and **Exhibit 5.2-6.** Exhibit 5.2-5 provides an overview of the passenger terminal second floor, including the existing Departures Hall and the proposed terminal expansion above the existing facilities. Exhibit 5.2-6 provides an overview of the passenger terminal first floor, including the existing Arrivals Hall and its proposed improvements.

The following subsections provide an overview of each functional element of Alternative 2.

5.2.2.1 Apron

Alternative 2 proposes an expansion of the terminal to accommodate aircraft directly at or near the terminal via passenger boarding bridges, as depicted on Exhibit 5.2-4. Alternative 2 would provide a total of four jet aircraft parking positions at the terminal and up to two remote power-in/power-out turboprop/regional jet positions accessible via enclosed walkways, for a total of six aircraft parking positions at or near the terminal. When not being utilized by jet aircraft, three of the four aircraft positions at the terminal could accommodate independent power-in/power-out turboprop operations. Alternative 2 would satisfy the 2035 DDFS gate and RON requirements.

5.2.2.2 Check-in Facilities

The current check-in facilities, depicted on Exhibit 5.2-5, are sufficient to accommodate passenger demand levels though the planning horizon (2035). However, to modernize the process, additional kiosks would be required. There is adequate space within the existing check-in hall to accommodate the 14 total kiosks required by 2035. These kiosks could be remote self-service common-use devices open to passengers of any airline, or they could replace in-line counter positions and remain staffed by airline agents.

5.2.2.3 Passenger Security Screening Checkpoint

Similar to Alternative 1, Alternative 2 proposes the construction of an 1,800-square-foot building extension to the west of the existing security checkpoint to include the third checkpoint lane and to retain the exit lane corridor (depicted on Exhibit 5.2-5). This third lane should be capable of functioning either as a dedicated Pre ✔ lane or a standard lane. This portion of the building would be raised on columns/stilts/pillars and would be open-air underneath.

5.2.2.4 Holdrooms

The following holdroom improvements are proposed for Alternative 2:

- Second floor: Construction of an 8,300-square-foot single holdroom for jet aircraft passengers, directly adjacent to the vertical circulation core, as depicted on Exhibit 5.2-5. This holdroom would consolidate the seating areas, which would minimize cross-circulation conflicts around agent podiums adjacent to the new jet bridge doors.
- First floor: Passengers traveling via turboprop aircraft would utilize the existing departure bridge and vertical circulation core to descend to the apron level, as depicted on Exhibit 5.2-6. Three doors in the north wall of the holdroom would continue to support three gates and a walkway on the apron to service ground-loaded aircraft.

5.2.2.5 Outbound Baggage Makeup Facilities

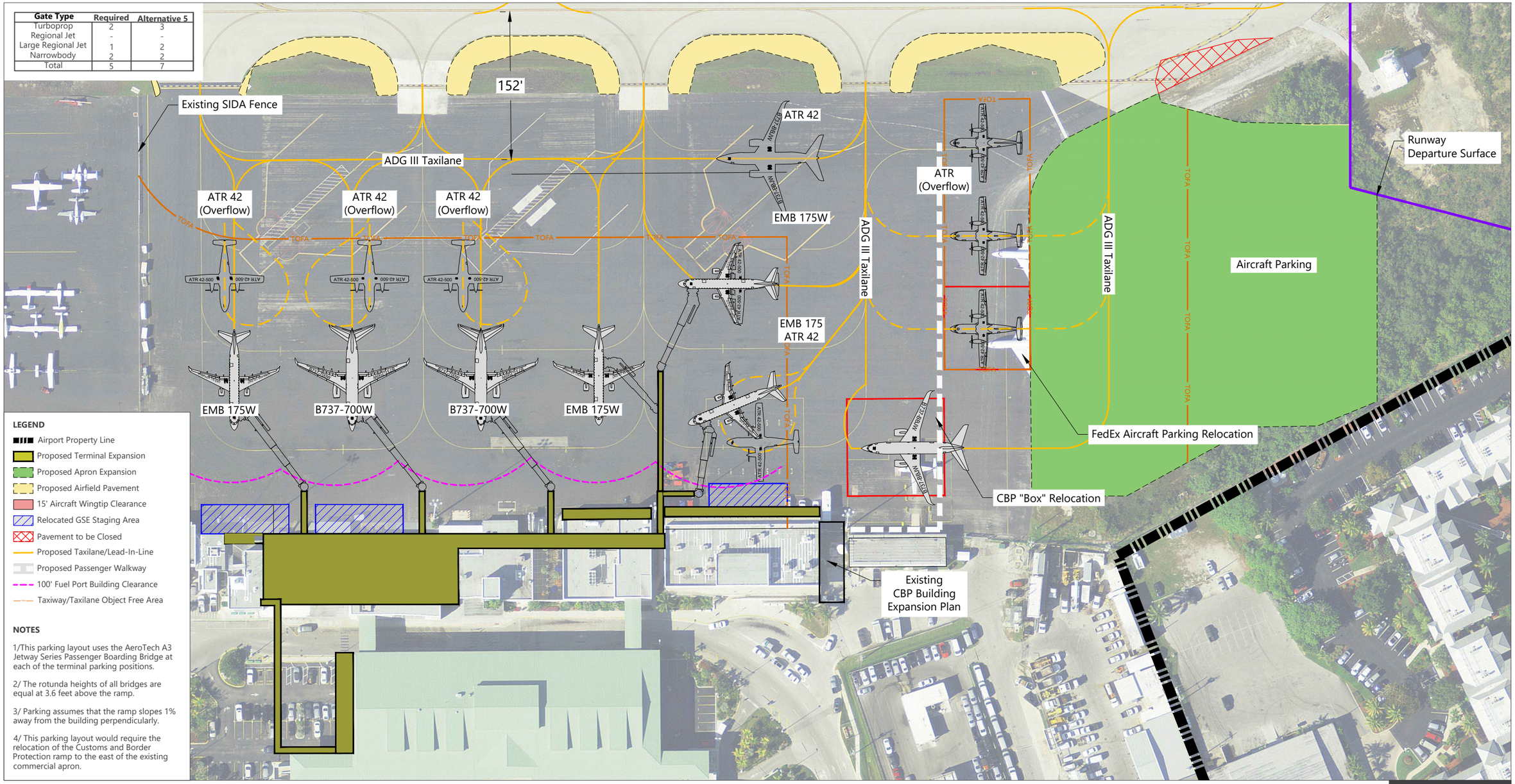
The existing outbound baggage makeup carousel, depicted on Exhibit 5.2-6, has sufficient length and capacity for all DDFS demand levels. However, additional area for physical cart staging will be required after 2020. This expansion can be covered and unenclosed, and it is recommended to extend to the north of the existing makeup area (also depicted on Exhibit 5.2-6). Airport activity levels should be periodically monitored to ensure the availability of outbound baggage makeup facilities. Should traffic continue to increase during peak times, a second outbound baggage makeup carousel may be required in the future. This carrousel would also provide redundancy while the primary device is undergoing maintenance.

5.2.2.6 Domestic Baggage Claim

Similar to Option 1, Alternative 2 recommends the construction of a new domestic baggage claim device in the western portion of the existing holdroom, as depicted on Exhibit 5.2-6. The capacity of this device would be sufficient to accommodate demand through the planning horizon. The existing devices in the Arrivals Hall would be retained and modernized for continued use during irregular operations.

Rental car counters currently operating out of the existing Arrivals Hall could be relocated to a consolidated rental car customer service area. The reclaimed area would enable the expansion of the waiting area in the Arrivals Hall for meeters and greeters. Windows could also be added in the Arrivals Hall to increase visual connections to the curb.

Gate Type	Required	Alternative 5
Turboprop	2	3
Regional Jet	-	-
Large Regional Jet	1	2
Narrowbody	2	2
Total	5	7



LEGEND

- Airport Property Line
- Proposed Terminal Expansion
- Proposed Apron Expansion
- Proposed Airfield Pavement
- 15' Aircraft Wingtip Clearance
- Relocated GSE Staging Area
- Pavement to be Closed
- Proposed Taxilane/Lead-In-Line
- Proposed Passenger Walkway
- 100' Fuel Port Building Clearance
- Taxiway/Taxilane Object Free Area

NOTES

1/This parking layout uses the AeroTech A3 Jetway Series Passenger Boarding Bridge at each of the terminal parking positions.

2/ The rotunda heights of all bridges are equal at 3.6 feet above the ramp.

3/ Parking assumes that the ramp slopes 1% away from the building perpendicularly.

4/ This parking layout would require the relocation of the Customs and Border Protection ramp to the east of the existing commercial apron.

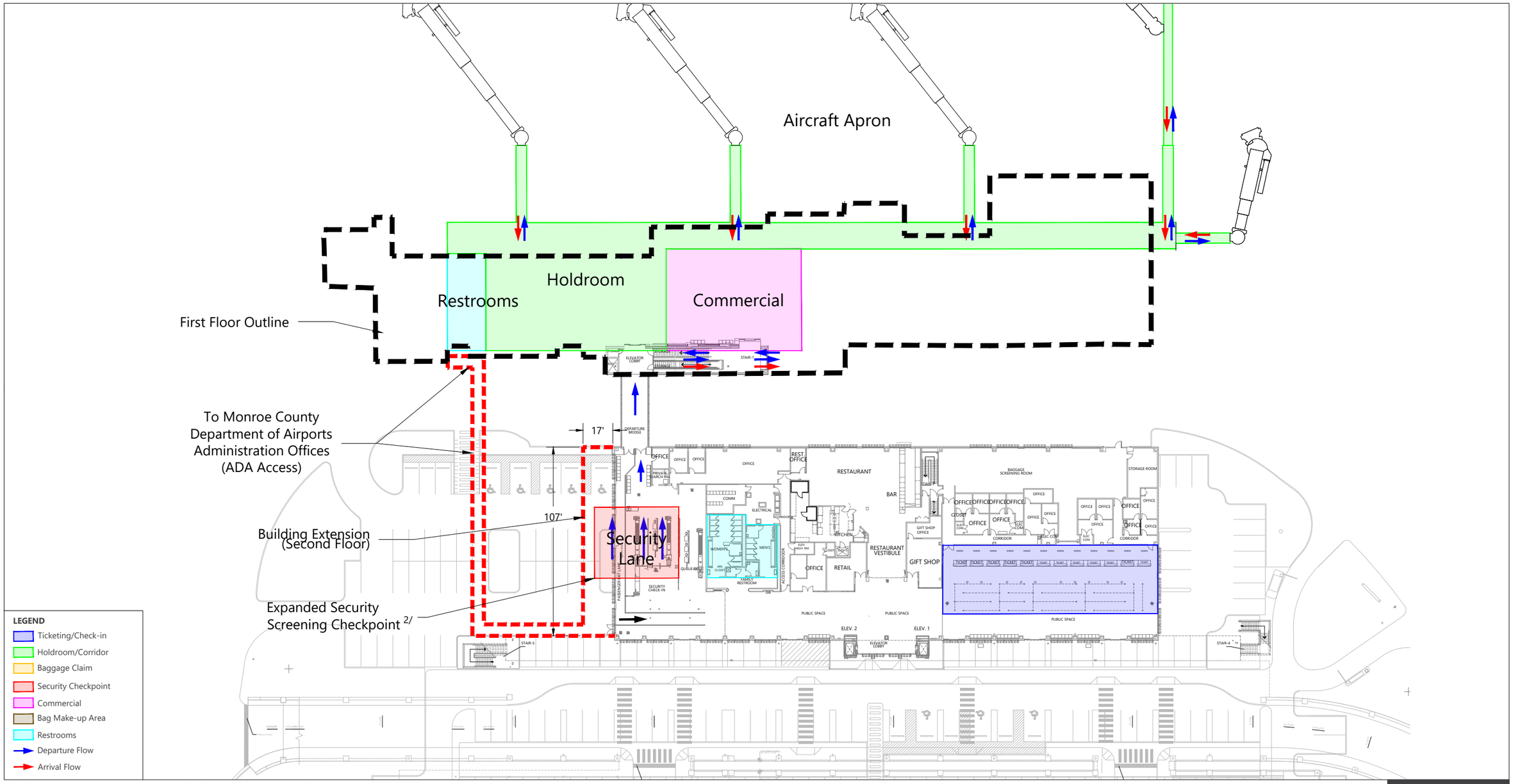
SOURCES: Monroe County Aviation Department, *Ameribridge Radial Drive PBB EYW Concepts*, September 2016; Ricondo & Associates, Inc., June 2017.
PREPARED BY: Ricondo & Associates, Inc., July 2017.

EXHIBIT 5.2-4

NORTH 0 100 ft.

Proposed Terminal Apron Layout
Alternative 2

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\206 - Alternatives\CAD\Commercial Apron_Alternative 5_20170706.dwgLayout: Option 5 Plotted: Mar 20, 2019, 09:29AM



SOURCES: American Infrastructure Development, Inc., April, 2016; Ricondo & Associates, Inc., June 2017.
PREPARED BY: Ricondo & Associates, Inc., July 2017.

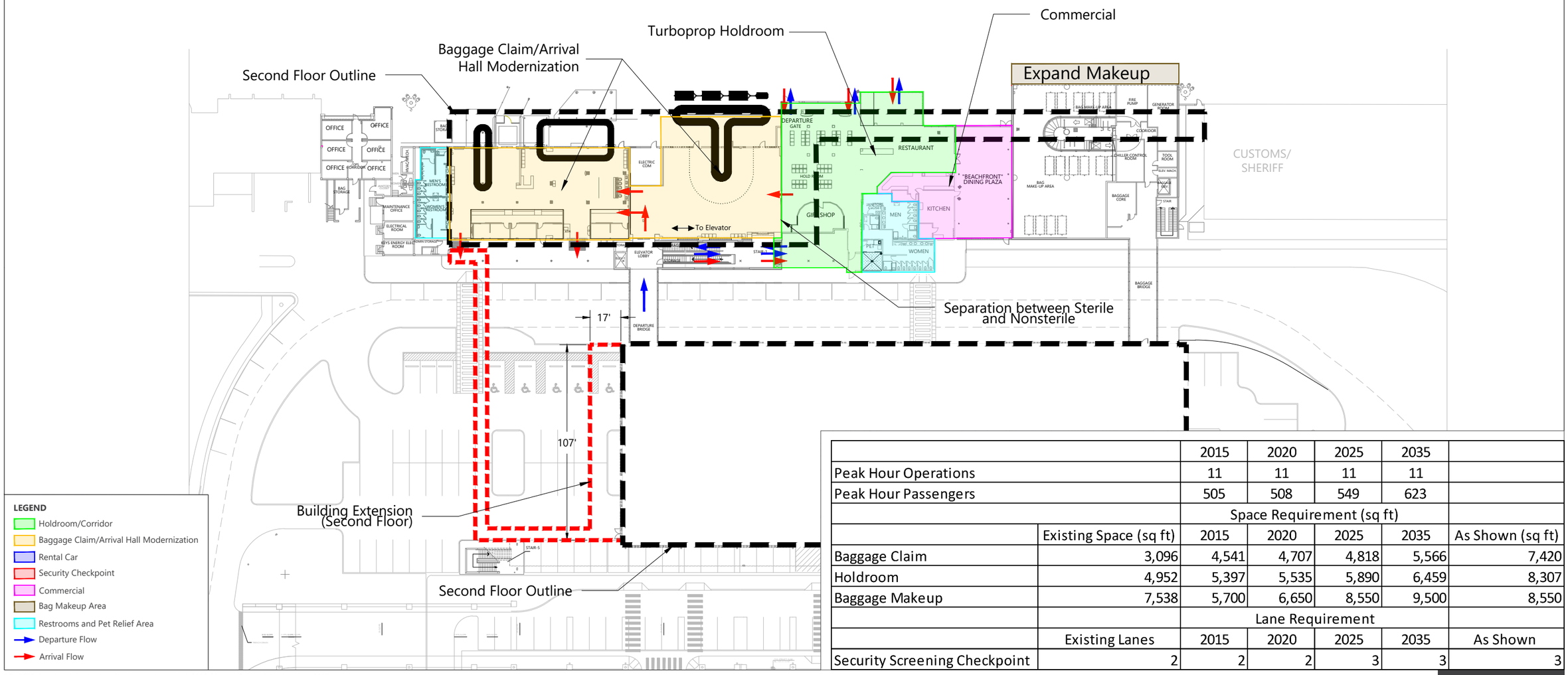
EXHIBIT 5.2-5

NORTH 0 55 ft.

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\206 - Alternatives\Terminal Alternatives\CAD\Terminal Alternative 5b-Upper_20170706dwg.dwgLayout: 11X17 Plotted: Mar 20, 2019, 01:03PM

Proposed Terminal Layout
Alternative 2-Second Floor

Aircraft Apron



		2015	2020	2025	2035	
Peak Hour Operations		11	11	11	11	
Peak Hour Passengers		505	508	549	623	
		Space Requirement (sq ft)				
	Existing Space (sq ft)	2015	2020	2025	2035	As Shown (sq ft)
Baggage Claim	3,096	4,541	4,707	4,818	5,566	7,420
Holdroom	4,952	5,397	5,535	5,890	6,459	8,307
Baggage Makeup	7,538	5,700	6,650	8,550	9,500	8,550
		Lane Requirement				
	Existing Lanes	2015	2020	2025	2035	As Shown
Security Screening Checkpoint	2	2	2	3	3	3

SOURCES: American Infrastructure Development, Inc., April 2016; Ricondo & Associates, Inc., June 2017.
PREPARED BY: Ricondo & Associates, Inc., July 2017.

EXHIBIT 5.2-6

NORTH 0 55 ft.

Proposed Terminal Layout
Alternative 2 First Floor

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\206 - Alternatives\Terminal Alternatives\CAD\Terminal Alternative 5a-Lower_20171219.dwgLayout: 11X17 Plotted: Mar 20, 2019, 01:03PM

5.2.2.8 Commercial Areas

The commercial area improvements in Option 2 would be similar to Option 1.

5.2.2.9 Construction Phasing

This alternative has fewer implications on the apron; however, additional testing would need to be performed on the existing structure to confirm it can carry the load of a second level during and after construction. Additional costs may be incurred to reinforce columns and to increase structural capacity of the existing terminal prior to the construction of new holdroom areas.

5.2.3 PREFERRED ALTERNATIVE SELECTION

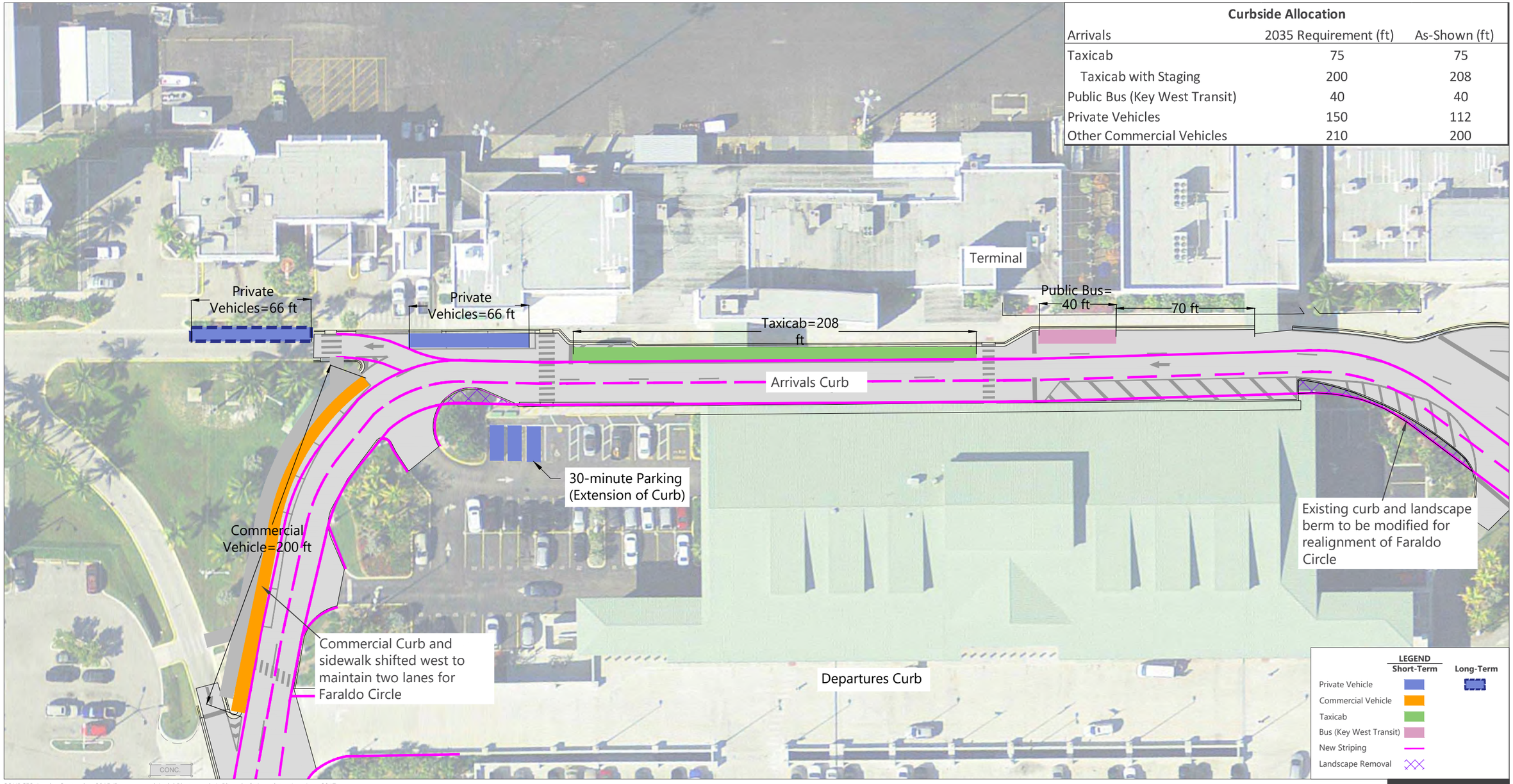
Based on input from the TRC and discussions with Airport Management, Alternative 1 has been selected as the preferred alternative. Alternative 1 is anticipated to offer advantages in terms of constructability, cost, and continuity of operations.

5.3 On-Airport Curbsides and Roadways

This section discusses alternatives to ease congestion at and in front of the passenger terminal curbside.

5.3.1 TERMINAL ARRIVALS CURBSIDES

Curbside improvement alternatives were prepared for the Arrivals Curbside only, since the Departures Curbside can accommodate demand through 2035. **Exhibit 5.3-1** presents the proposed short-term (2025) and long-term (2035) Arrivals Curbside configuration. Designated curbside areas were provided for the following modes of transportation:



Curbside Allocation

Arrivals	2035 Requirement (ft)	As-Shown (ft)
Taxicab	75	75
Taxicab with Staging	200	208
Public Bus (Key West Transit)	40	40
Private Vehicles	150	112
Other Commercial Vehicles	210	200

SOURCES: Jacobs, September 2015 (Basemap and Aerial Photography); Ricondo & Associates, Inc., June 2017.
PREPARED BY: Ricondo & Associates, Inc., July 2017.

EXHIBIT 5.3-1

NORTH 0 50 ft

Proposed Arrivals Curb Layout

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\206 - Alternatives\CAD\EYW-Landside_Alts_v7(2035 Curb)_20170710.dwgLayout: Ex_5.3-2 Plotted: Oct 24, 2017, 12:30PM

- **Taxicabs**: The taxicabs curb is proposed to be extended west in the short term, from a length of 184 feet to 208 feet.
- **Private Vehicles**: There is a lack of private vehicle parking bays at the passenger terminal Arrivals Curbside. Currently, only three parking bays are provided, while ten private vehicle parking bays of curbside are required in 2015. The short-term curbside layout proposes a 66-foot-long parking curbside for private vehicles, in the same location as the existing three parking bays, at the western end of the terminal curbside. This private vehicle curbside is proposed to be extended west by another 66 feet in the long term, for a total of six parking bays. Additionally, three 30-minute parking bays are proposed across the street from the short-term private vehicle parking bays.
- **Commercial Vehicles**: The commercial vehicle curb is proposed to be shifted west in the short term to allow Faraldo Circle to maintain two lanes of traffic; it will also be lengthened from 177 feet to 200 feet.
- **Public Bus**: Public transit bus (Key West Transit) loading is proposed to be relocated from the taxicab curbside to an area east of the taxicab curbside. A 40-foot-long curbside would become available in the short term.

5.3.2 ROADWAY FACILITIES

This section describes the proposed roadway improvements to ease congestion in front of the passenger terminal building.

5.3.2.1 Faraldo Circle Realignment

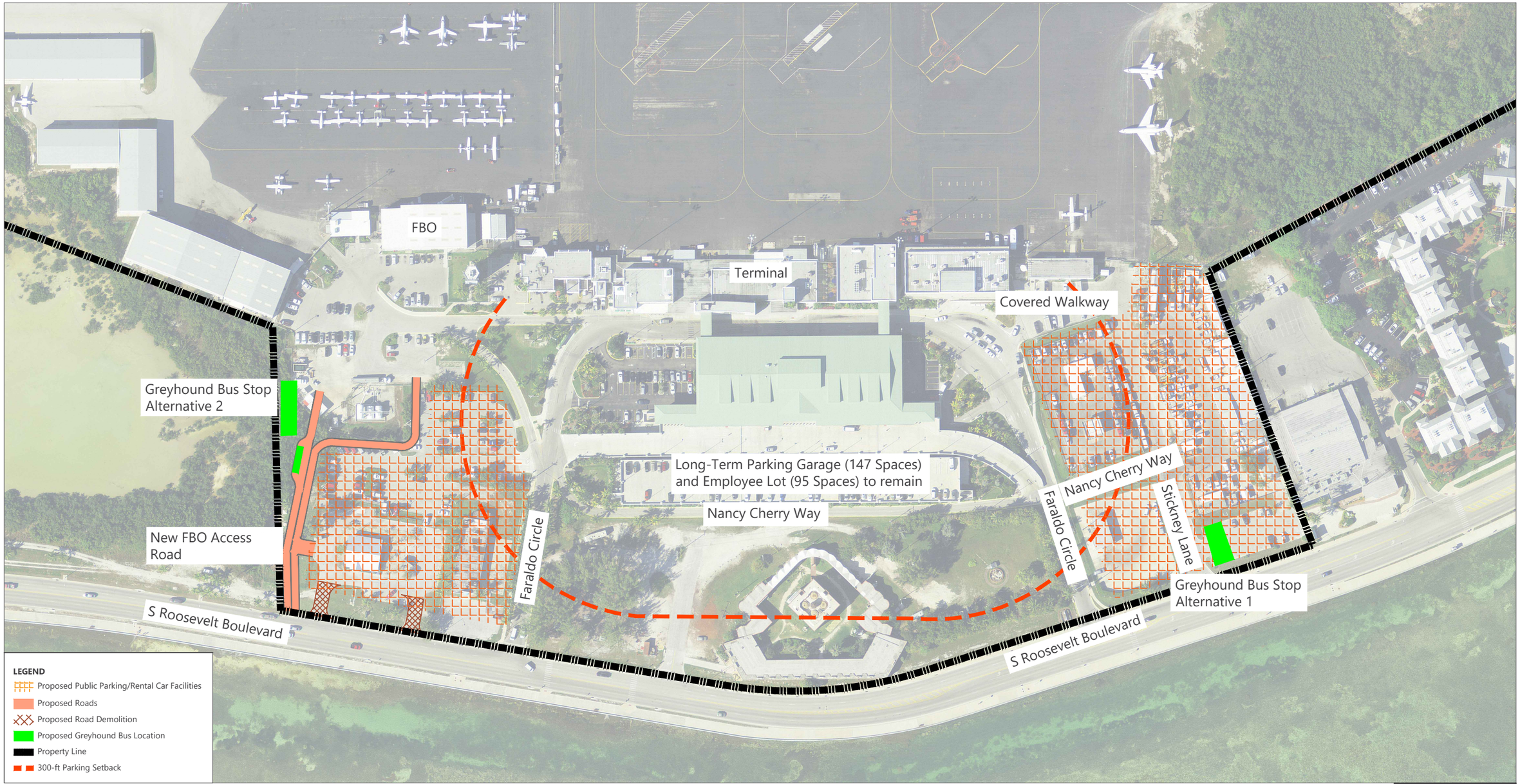
Faraldo Circle is proposed to be realigned, as shown on Exhibit 5.3-1, to allow the roadway to maintain two lanes along its entire length. Enabling projects for this realignment would include the modification of curbsides and landscaping, as well as roadway pavement construction and striping.

5.3.2.2 Fixed-Base Operator Facilities Access

To remove FBO-bound traffic from the terminal curbside area, an alternate landside access road to the FBO facilities is proposed, as illustrated on **Exhibit 5.3-2**. This new access roadway would provide a direct connection between S. Roosevelt Boulevard and the FBO automobile parking lot.

5.3.3 GREYHOUND BUS FACILITIES

To keep Greyhound buses from using Faraldo Circle and to further ease congestion in front of the passenger terminal building, the Greyhound bus stop and office is proposed to be relocated. Two sites were identified, which are depicted on Exhibit 5.3-2. The first site, Alternative 1, is at the intersection of S. Roosevelt Boulevard and Stickney Lane, east of Faraldo Circle. The second site, Alternative 2, is located along the proposed FBO access road, west of Faraldo Circle.



SOURCES: Jacobs, September 2015 (Basemap and Aerial Photography); Ricondo & Associates, Inc., June 2017.
PREPARED BY: Ricondo & Associates, Inc., July 2017.

EXHIBIT 5.3-2

NORTH 0 200 ft

Proposed Landside Access and Parking Facilities
Long Term

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\206 - Alternatives\CAD\EYW-Landside_Alts_v7(2025 Curb)_CM_20170710.dwgLayout: Ex_5.4-1 Plotted: Mar 6, 2019, 12:46PM

5.4 Public Parking and Consolidated Rental Car

5.4.1 PUBLIC PARKING FACILITIES

Additional public parking capacity will be provided in a location east or west of Faraldo Circle. The location of the proposed parking facilities will be established once the location for a proposed consolidated rental car center has been confirmed. Exhibit 5.3-2 depicts the general location of the proposed public parking facilities.

5.4.2 CONSOLIDATED RENTAL CAR CENTER

A consolidated rental car center is being proposed to provide the necessary space for the on-Airport rental car companies to accommodate ready/return and quick turnaround (QTA) facilities in a single location at the Airport. The QTA facilities will include fueling, car wash, and support facilities allowing vehicles to be returned to service quickly and reducing the amount of storage space needed for rental cars. The ready/return facilities will include the areas required to allow customers to pick up and return rented vehicles. This facility would provide an opportunity to consolidate the customer service areas currently located in the Arrivals Hall, the ready and return functions for each vehicle, and potential overflow storage.

The preliminary space program and operating requirements for the rental car companies at the Airport will be established as part of a standalone study based upon information provided by the rental car facilities. This study will also include the development of a functional layout and the identification of a preferred site for the proposed consolidated rental car center. Exhibit 5.3-2 depicts the general location for the proposed consolidated rental car center.

5.5 Air Cargo Facilities

The existing air cargo facilities are adequate to accommodate the existing and future demand. As the terminal building and apron are expanded to accommodate future demand, it may be necessary to relocate the FedEx operation. During discussions with TRC, it was suggested that FedEx's landside operations could ultimately be relocated off-site, eliminating the need for a cargo facility at the Airport. Access to an AOA gate and ramp parking area would suffice.

5.6 General Aviation Facilities

This section discusses the development of GA facilities for accommodating the Airport's forecast GA demand and associated facility requirements. The existing GA areas support a variety of aircraft activity and storage needs. An expanded GA ramp is anticipated to be required by the end of the planning period (2035) to adequately accommodate forecast demand.

The proposed GA development plan was developed to accommodate GA facility growth, while remaining within the existing property boundary and minimizing environmental impacts. Given the spatial limitations at the

Airport, the need to protect Runway 9-27 and its airspace, and the inability to provide dedicated vehicular access to much of the land reserved for GA development, the GA development strategies presented in the following subsections may not fully meet the requirements established in Section 4. Short-term and long-term aircraft storage development plans were prepared.

5.6.1 SHORT-TERM APRON EXPANSION

Exhibit 5.6-1 depicts the short-term GA development plan, which provides an additional 5,000 square yards of aircraft parking apron west of the existing west apron. This additional apron could accommodate an estimated 45 single-engine aircraft, 4 multi-engine aircraft, and 4 small jets.

5.6.2 LONG-TERM APRON EXPANSION

Exhibit 5.6-2 depicts the long-term GA development plan, which proposes the expansion of the apron to be constructed in the short-term by 24,000 square yards (including the expansion of the existing west apron to the south).

5.7 Airport Support Facilities

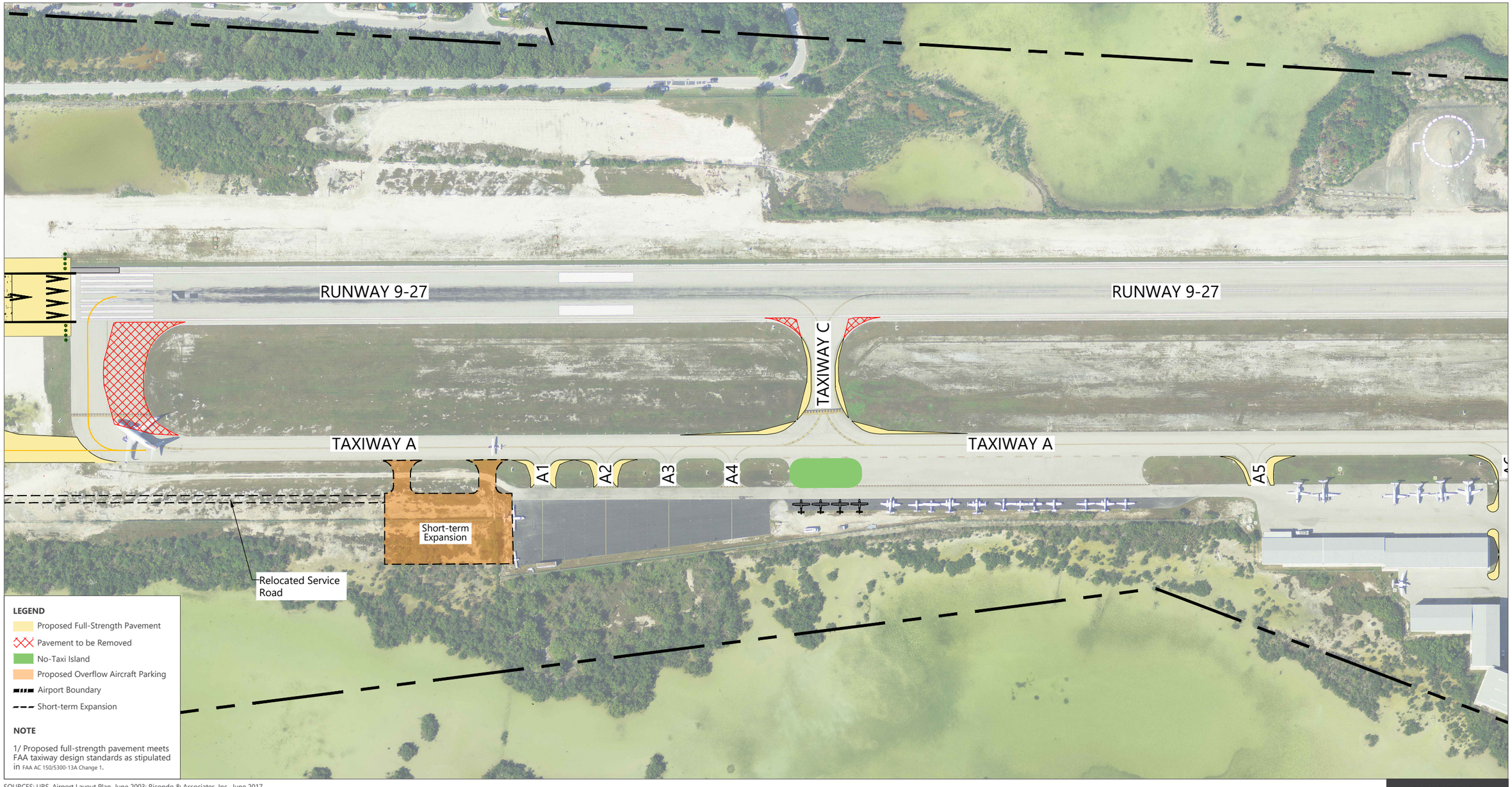
As discussed in Section 4.7, the existing fuel facilities and ARFF station are adequate to accommodate the existing and forecast demand throughout the planning period. The U.S. CBP facility is currently being expanded from 9,392 square feet to 14,744 square feet. The following subsections discuss the proposed improvements to the Airport maintenance facility and ATCT.

5.7.1 AIRPORT MAINTENANCE FACILITY

Functions of the maintenance department are housed in separate areas throughout the Airport property. To increase efficiency, the TRC suggested the consolidation of all maintenance functions into a centralized facility. **Exhibit 5.7-1** illustrates a proposed location, which includes an open-air maintenance building and storage area. This area will be in a newly constructed garage extension on the westside of the existing employee parking garage. The ground level will remain open to limit/avoid impacts to an existing retention area.

5.7.2 AIR TRAFFIC CONTROL TOWER

During conversations with the ATCT manager and staff, which took place for the preparation of Section 2, it was noted that the tower requires maintenance and repair. Further, the tower suffered considerable damage during Hurricane Irma in September 2017. The FAA dispatched its mobile ATCT as a temporary workaround to limit impacts to commercial operations. It is anticipated that a new tower will be constructed in the same area as the existing tower, and the height should be sufficient to mitigate any line-of-sight issues with Taxiway A5. **Exhibit 5.7-2** depicts the proposed tower location and the line of sight for each runway end.



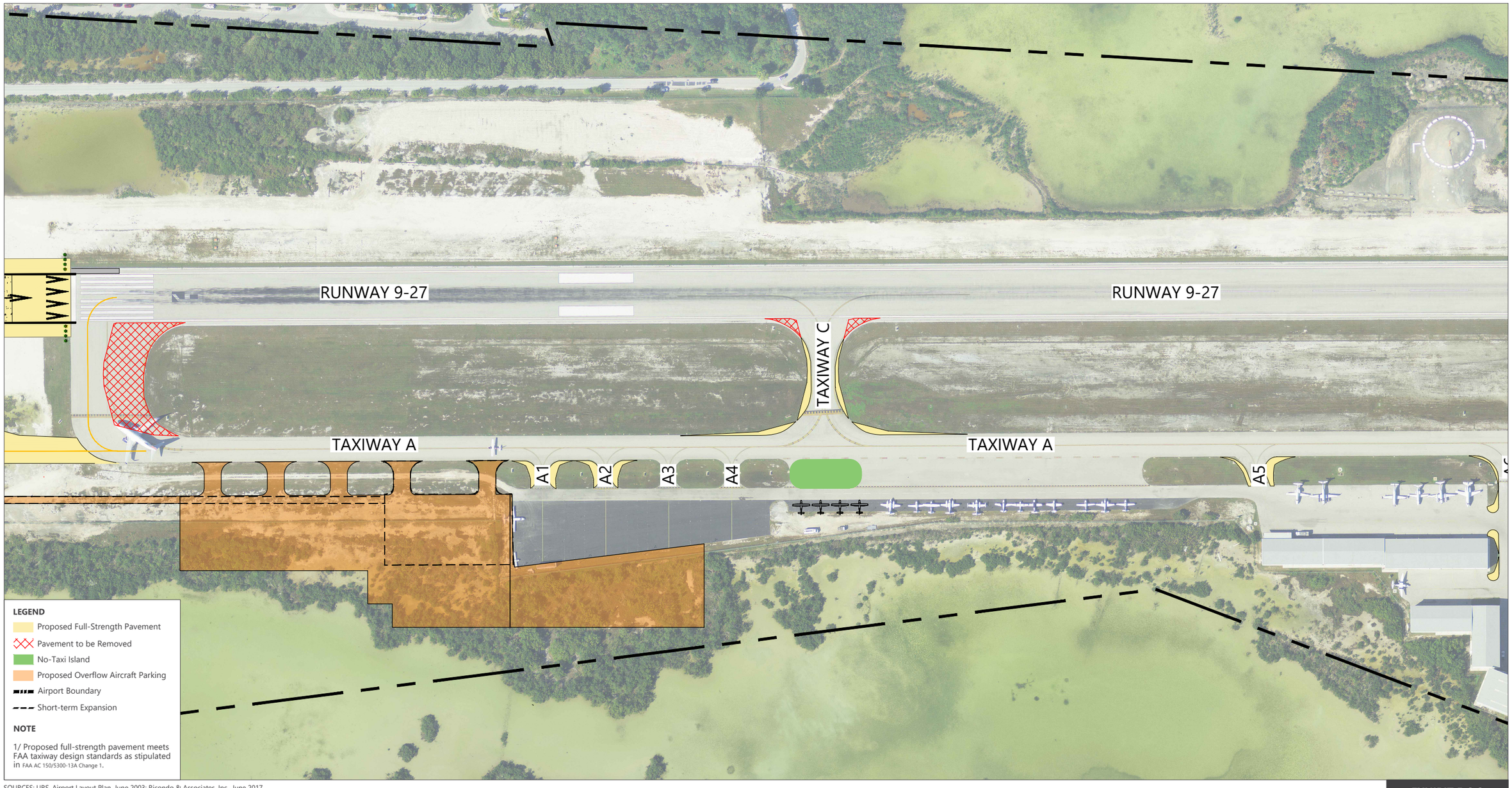
SOURCES: URS, Airport Layout Plan, June 2003; Ricondo & Associates, Inc., June 2017.
PREPARED BY: Ricondo & Associates, Inc., July 2017.

EXHIBIT 5.6-1

NORTH 0 200 ft.

Proposed General Aviation Apron Expansion
Short Term

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\214- Supplemental Tasks\Airfield Geometry Assessment\CAD\Exhibit 5.6-1 & 2 GENERAL AVIATION ALTS 20190226.dwgLayout: 5.6-1 Plotted: Mar 6, 2019, 01:01PM



SOURCES: URS, Airport Layout Plan, June 2003; Ricondo & Associates, Inc., June 2017.
PREPARED BY: Ricondo & Associates, Inc., July 2017.

EXHIBIT 5.6-2

Proposed General Aviation Apron Expansion
Long Term

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\214- Supplemental Tasks\Airfield Geometry Assessment\CAD\Exhibit 5.6-1 & 2 GENERAL AVIATION ALTS 20190226.dwgLayout: 5.6-2 Plotted: Mar 6, 2019, 03:17PM



SOURCE: Basemap and Aerial Photography, Jacobs, September, 2015.
PREPARED BY: Ricondo & Associates, Inc., October 2017.

EXHIBIT 5.7-1

NORTH 0 200 ft.

Proposed Maintenance Facility

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\214- Supplemental Tasks\Airfield Geometry Assessment\CAD\EYW-Maintenane Consolidated 20171204.dwgLayout: Option 1 Revised Plotted: Dec 4, 2017, 09:09AM



SOURCE: Basemap and Aerial Photography, Jacobs, September, 2015.
PREPARED BY: Ricondo & Associates, Inc., December 2017.

EXHIBIT 5.7-2

Proposed New Tower Location

Drawing: C:\Users\jblanco\Desktop\EYW New ATCT Tower\5.8-1 EYW-New ATCT Facility.dwgLayout: 11x17L Plotted: Dec 4, 2017, 05:15PM

Chapter 6

Environmental Overview

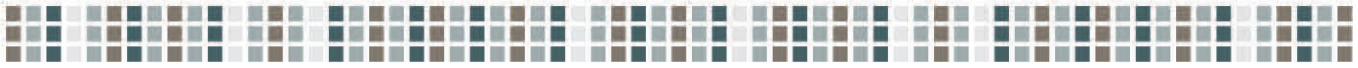


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6. Environmental Overview

In addition to identifying Airport projects that are financially and technically sound, an important part of the master planning process is minimizing the potential environmental effects of the recommended projects, as well as understanding the environmental issues that could be considered in future environmental reviews. This section provides a general overview of the potential environmental consequences and environmental review requirements associated with the capital improvement projects recommended as part of the preferred development alternative in the MPU. Prior to project implementation, the potential environmental effects of these projects will need to be reviewed in accordance with NEPA requirements and implementing guidance in FAA Orders 1050.1F, *Environmental Impacts: Policies and Procedures*, and 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, or the latest versions of those Orders at the time of environmental processing.

A project is considered ready for NEPA evaluation when the construction is expected to be initiated within a few years (i.e., construction should begin within 3 years of the FAA's issuance of a finding). The level of environmental documentation required for a proposed action depends on the type of project(s), the potential environmental effects of the project(s), and the types of environmental resources that could be affected. The three levels of environmental documents prepared to comply with NEPA are:

- **Categorical Exclusion** – FAA Order 1050.1F lists projects that typically do not result in significant adverse impacts. These projects are eligible for a categorical exclusion if no extraordinary circumstances are involved. Following FAA guidance, brief documentation of the project and confirmation that no extraordinary circumstances exist to support the FAA's determination may be required.
- **Environmental Assessment** – An EA is prepared for projects that are not eligible for a categorical exclusion; the EA determines whether the proposed action has the potential to result in a significant adverse impact. The EA presents a discussion and evaluation of the potential environmental effects. If no significant impacts would be expected to occur, or it is demonstrated that any potential impacts could be mitigated to a level below significance, then the FAA issues a Finding of No Significant Impact. If the adverse environmental impacts cannot be mitigated below a level of significance, then further analysis is required and an Environmental Impact Statement (EIS) is prepared by the FAA.
- **Environmental Impact Statement** – An EIS presents detailed analyses of the environmental effects of a proposed action. The EIS process provides for full public disclosure of significant environmental effects, practicable alternatives that would avoid or minimize adverse effects, and mitigation for those impacts that cannot be avoided.

6.1 Master Plan Development Projects

Table 6.1-1 lists the capital improvement projects identified for the MPU preferred development alternative. The table identifies the capital improvement projects that are eligible for categorical exclusion under NEPA, pending confirmation that no extraordinary circumstances exist. Also included are the relevant paragraphs in FAA Order 1050.1F that cite each of the excluded projects as being eligible for NEPA categorical exclusion.

Table 6.1-1: EYW Master Plan Preferred Development Alternative – Capital Improvement Projects and Categorical Exclusion References

CAPITAL IMPROVEMENT PROJECT	NEPA CATEGORICAL EXCLUSION[1/]	FAA ORDER 1050.1F PARAGRAPH REFERENCE[2/]
Airfield		
Taxiway A extension to the west	Not Eligible	--
Vehicle service road relocation	Not Eligible	--
Removal of existing taxiway D	Eligible	5-6.4.e
Construction of new runway exits	Eligible	5-6.4.e
Removal of existing wide expanses of pavement	Eligible	5-6.4.e
Fillet modifications	Eligible	5-6.4.e
Commercial ramp expansion to the east	Not Eligible	--
Commercial ramp restriping	Eligible	5-6.4.e
Landside		
Faraldo Circle realignment	Eligible	5-6.4.a
Commercial Curb enhancement	Eligible	5-6.4.f
Public and rental car facilities expansion	Eligible	5-6.4.h
Consolidated rental car expansion	TBD	TBD
Greyhound bus relocation Alternative 1	Eligible	5-6.4.i
Greyhound bus relocation Alternative 2	Eligible	5-6.4.i
General aviation access road construction	Potentially Eligible	5-6.4.a
Terminal		
Terminal expansion	Not Eligible	--
General Aviation		
Overflow aircraft parking ramp expansion Phase 1	Not Eligible	--
Overflow aircraft parking ramp expansion Phase 1	Not Eligible	--
Support Facilities		
Maintenance storage area	Eligible	5-6.4.f

NOTES:

NEPA – National Environmental Protection Agency

FAA – Federal Aviation Administration

1/ Projects are eligible for a categorical exclusion if no extraordinary circumstances exist, as listed in Section 1-10.15 of FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*.

2/ The cited paragraphs in FAA Order 1050.1F relate to the following:

- 5-6.4.a Construction, relocation, or repair that would not reduce the level of service on local traffic systems below acceptable levels.
- 5-6.4.e Construction, repair, reconstruction, resurfacing, extending, strengthening, or widening that would not result in significant erosion or sedimentation, would not result in a significant noise increase over noise sensitive areas, or would not result in significant air quality impacts.
- 5-6.4.f Construction or limited expansion of accessory onsite structures, such as storage buildings, garages, hangars, small parking areas, signs, fences, and other essentially similar minor development items.
- 5-6.4.h Construction or expansion of facilities that would not substantially expand those facilities.
- 5-6.3.i Installations involving fewer than 3 acres of land that do not have the potential to cause significant impacts on bird or bat populations.

SOURCE: Ricondo & Associates, Inc., July 16, 2015 (Based on FAA Order 1050.1F).

PREPARED BY: Ricondo & Associates, Inc., June 2017.

6.2 Summary of Potential Environmental Effects

The Environmental Overview considers potential effects of the capital improvement projects on the environmental resource categories identified in FAA Orders 1050.1F and 5050.4B. **Table 6.2-1** lists the environmental categories considered. Categories that are not applicable to the site are briefly explained in the following section.

Table 6.2-1: Master Plan Preferred Development Alternative – Environmental Categories and Potential Effects

RESOURCE CATEGORY	RESOURCE EXISTS ON OR NEAR THE AIRPORT	POTENTIAL EFFECT
Water Resources		
Wild and Scenic Rivers	Not Applicable	N/A
Surface Waters	Applicable	Unknown
Wetlands	Applicable	Yes
Coastal Barriers/Coastal Zone Resources	Applicable	Unknown
Floodplains	Applicable	Yes
Department of Transportation Act, Section 4(f)	Applicable	No
Farmlands	Not Applicable	N/A
Air Quality	Applicable	No
Historical, Architectural, Archeological Resources, and Cultural Resources	Applicable	No
Biotic Resources (including fish, wildlife, and plants)	Applicable	Yes
Hazardous Materials, Solid Waste, and Pollution Prevention	Applicable	Unknown
Noise Compatibility and Land Use	Applicable	No
Construction Impacts	Applicable	No
Socioeconomic Impacts	Applicable	No

NOTES:

No – Environmental issue not anticipated.

Yes – Potential environmental issue.

Unknown – Potential impact unknown.

Applicable/Not Applicable – Resource is present on or near the Airport or may be affected by the Preferred Development Project.

SOURCE: Ricondo & Associates, Inc., June 2017 (see Section 1.3).
PREPARED BY: Ricondo & Associates, Inc., June 2017.

6.3 Resource Area Overview

6.3.1 WATER RESOURCES

6.3.1.1 Wild and Scenic Rivers

Wild and scenic rivers are designated by the U.S. Department of the Interior to protect the most beautiful and unspoiled rivers in the nation under the Wild and Scenic Rivers Act. Two rivers in Florida, the Loxahatchee River and the Wekiva River, are designated as Wild and Scenic Rivers.[1] Neither river is near the Airport; therefore, the MPU preferred development projects would not affect a wild and scenic river.

6.3.1.2 Wetland Habitats

Wetlands are habitats that are frequently inundated or saturated with water, have soils that show the effects of saturation, and support plant species that have adapted to wet conditions.

Executive Order 11990, *Protection of Wetlands*, directs federal agencies to minimize the destruction, loss, or degradation of wetlands on federal property or on projects with federal funding. Wetlands that are adjacent to Waters of the United States[2], or those that have a significant physical, chemical, or biological nexus, are also considered Waters of the United States. These jurisdictional wetlands are protected under the Clean Water Act of 1972 and require a permit from the U.S. Army Corps of Engineers before they may be filled.

The U.S. Fish and Wildlife Service's (USFWS's) National Wetlands Inventory (NWI) informs of several on-Airport wetlands. Based on the current NWI, the following projects could impact on-Airport wetlands: [3]

- west Taxiway A extension
- commercial ramp extension
- service road relocation
- overflow aircraft parking ramp (Phases 1 and 2)
- Greyhound bus station relocation
- public parking expansion
- rental car facilities expansion
- construction of new runway exits

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1 National Wild and Scenic Rivers System, https://www.rivers.gov/florida.php (accessed June 6, 2017).

2 United States Environmental Protection Agency, About Waters of the United States, https://www.epa.gov/wotus-rule/about-waters-united-states (assessed April 6, 2018)

3 United States Fish and Wildlife Service, National Wetlands Inventory, https://www.fws.gov/wetlands/data/mapper.html (accessed June 15, 2017).

Therefore, as part of future NEPA evaluations for these projects, site investigations with the USFWS should be coordinated to determine whether the mapped wetlands meet the relevant criteria. Results of these site investigations should be incorporated into the NWI.

6.3.1.3 Coastal Barriers/Coastal Zone Resources

The Coastal Zone Management Act requires that federal permitting and funding decisions be fully consistent with the state's approved coastal management program. All projects at the Airport are within the boundaries of the Coastal Zone Management Program. Additionally, if the City is seeking federal funding or approval, then the projects would require review by appropriate federal and State of Florida environmental agencies.

Although EYW property is not located within a Coastal Barrier Resources Act Zone or seaward of the Coastal Construction Control Line permit area, as defined by the Florida Department of Environmental Protection (FDEP), the City of Key West is designated as an "Area of Critical Concern." Therefore, future Airport development may impact coastal resources under purview of the Florida Coastal Management Program (FCMP). Future coordination with the FDEP would be required to determine the potential effects on FCMP resources resulting from development of the preferred alternative.

6.3.1.4 Surface Water Quality

The Federal Water Pollution Control Act, as amended (commonly referred to as the Clean Water Act), establishes water quality standards; develops waste treatment management plans and practices; prevents or minimizes the loss of wetlands; establishes location with regard to an aquifer or sensitive ecological area, such as a wetlands area; and regulates other issues concerning water quality. The City of Key West regulates stormwater runoff through a FDEP Environmental Resource Permit (ERP), which may require modification to accommodate the MPU preferred development alternative.

Waters surrounding the Florida Keys are designated as "Outstanding Florida Waters (OFW)". Section 403.061(27), Florida Statutes, grants the FDEP with the power to establish rules that provide for a special category of waterbodies within the state, to be referred to as "Outstanding Florida Waters (OFW)," which shall be worthy of special protection because of their natural attributes.[4] Statutes dictate that the FDEP cannot issue permits for direct discharges to OFWs that would lower ambient (existing) water quality. The FDEP also may not issue permits for indirect discharges that would significantly degrade a nearby waterbody designated as an OFW.[5]

Coordination with the City of Key West and the FDEP would be necessary to ensure water quality standards are not affected by future Airport development.

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[4] Florida Department of Environmental Protection, *Factsheet about Outstanding Florida Waters*, http://www.dep.state.fl.us/water/wqssp/ofwfs.htm (accessed June 15, 2017).

[5] Florida Administrative Code, *Surface Water Quality Standards*, Chapters 62–302.

6.3.1.5 Floodplains

Airport development will be subject to Executive Order 11988, *Floodplain Management*, which requires "federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative."[6] Department of Transportation (DOT) Order 5650.2, *Floodplain Management and Protection*, and FAA Orders 1050.1F and 5050.4B contain policies and procedures for implementing the Executive Order and for evaluating potential floodplain impacts. FAA Order 1050.1F, *Environmental Impacts, Policies and Procedures*, supports DOT Order 5650.2 through policies and procedures for evaluating potential floodplain impacts.

Executive Order 11988 directs federal agencies to reduce the risk of flood loss; to minimize the impact of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains.

A review of FEMA flood zone maps indicates the entire Airport appears to be situated in a flood hazard area, Zones "AE" and VE." Zone AE refers to an area inundated by 100-year flooding, for which base elevations have been determined. Zone VE refers to an area inundated by 100-year flooding with velocity hazard (wave action), for which base elevations have been determined. Exhibit 2-34, included in the inventory chapter, illustrates the FEMA flood zone designations on and surrounding the Airport's property.

6.3.2 DEPARTMENT OF TRANSPORTATION ACT SECTION 4(f) LANDS

Section 4(f) of the U.S. DOT Act of 1966 specifies that transportation projects cannot take land from public parks, historic sites, or wildlife refuges without it first being determined that no reasonable and prudent alternative exists. Takings can include physical acquisition of these lands or environmental impacts, such as high noise levels, that would make these lands unsuitable for their desired uses.

Section 4(f) resources within or adjacent to EYW, as described within the 2007 RSA EA for the Airport, are the following:

1. East Martello Tower: The tower is located at 3501 South Roosevelt Boulevard near the entrance to the Airport. The East Martello Tower is a publicly owned historic resource and is located on Airport property. The parcel containing the East Martello Tower is leased from Monroe County by the Key West Art & Historical Society; it was listed in the National Register of Historic Places (NRHP) in 1972.

2. "The Pines" Public Park: A small public park, unofficially named "The Pines," is located on South Roosevelt Boulevard at the entrance to EYW. The County-owned park is located on Airport property. The park property provides unimproved space for vehicle parking and contains several concrete tables and benches.

[6] 42 Federal Register (FR) 26951, Executive Order 11988, Floodplain Management, May 24, 1977.

3. Little Hamaca Park: Owned by the City of Key West, the park is located on Government Road at a former coastal defense missile site on the north edge of the salt pond north of the EYW property boundary. The park has a botanical nature trail, which includes boardwalks and a picnic area. The park provides for educational and recreational walking tours of native vegetation types, birds, and wildlife.

It is not expected that any DOT Section 4(f) lands would be affected by the Airport MPU preferred development alternative, because there would be no direct or indirect impacts to these properties. DOT Section 4(f) lands described above are illustrated on **Exhibit 6.3-1**.

6.3.3 FLORIDA NATURAL AREAS INVENTORY

The Florida Natural Areas Inventory[7] is a database of conservation land in Florida. The database includes data on national parks, forests, wildlife management areas, and wildlife preserves which is obtained from federal, state, and local governments, and privately management organizations. Land designated as conservation areas on airport property, which are managed by Monroe County equates to 1,706 acres. These areas are illustrated on **Exhibit 6.3-2**.

[7] Florida Natural Areas Inventory, http://fnai.org/conservationlands.cfm (accessed April 17, 2018)



SOURCE: Martinez GeoSpatial, *Basemap Planimetrics*, November 2016; Martinez Geospatial, *Aerial Photography*, April 2016.
PREPARED BY: Ricondo, Inc., April, 2018.

EXHIBIT 6.3-1

NORTH 0 500 ft.

Department of Transportation Act Section 4(f) - Public Parks & Historical Sites Near Airport

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\207 - Environmental Overview\CAD\EYW Environmental Overview Public Parks Exhibit.dwgLayout: Exhibit 6.3-1 Plotted: Oct 9, 2018, 12:26PM



SOURCE: Google Earth, April 2018 (aerial photography); Florida Natural Areas Inventory, Florida Conservation Lands, http://fnai.org/conservationlands.cfm (accessed April 17,2018).
PREPARED BY: Ricondo & Associates, Inc., April 2018.

EXHIBIT 6.3-2

NORTH 0

Florida Natural Areas Inventory - Conservation Areas on Airport Property

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\207 - Environmental Overview\CAD\EYW Environmental Overview Exhibits.dwgLayout: Conservation lands Plotted: Jun 12, 2020, 07:35AM

6.3.4 FARMLAND

Preservation of prime farmland is a priority goal for the U.S. Department of Agriculture, and the effects on prime farmland related to projects with federal support must be assessed.

In accordance with the Farmland Protection Policy Act (FPPA), if land was purchased prior to August 6, 1984, for the purposes of being converted to nonagricultural uses, then the provisions of the FPPA are not applicable. The MPU development projects would occur on land purchased prior to August 6, 1984, for military use and the development of EYW; therefore, the FPPA would not apply to projects on Airport property.[8]

6.3.5 AIR QUALITY

The federal Clean Air Act, as amended, required the U.S. EPA to establish National Ambient Air Quality Standards (NAAQS) for principle air pollutants considered harmful to public health and the environment. Those areas where the NAAQS are not met are designated as "nonattainment." Monroe County, Florida, is classified as "attainment" for all criteria air pollutants.[9]

The two principle sources of air pollution associated with the development and operation of the Airport are vehicular (both customer and maintenance vehicles and equipment) and aircraft emissions. Changes in air quality resulting from aircraft and/or vehicle emissions are not anticipated since the preferred development alternative is not expected to induce activity or increase the number of aircraft operations. Implementation of the preferred development alternative would require coordination with the Florida Department of Environmental Protection Division of Air Resource Management to determine permitting requirements under the New Source Review and Prevention of Significant Deterioration Program. In addition, future Airport development projects that require NEPA review must consider the project's effect on air quality.

Construction permits are used to implement the federal Clean Air Act requirements for air quality, including Best Available Control Technology determinations. Air quality associated with construction emissions, specifically dust, will not be a long-term factor. All necessary permits should be obtained before construction begins to ensure Best Management Practices, such as watering, are followed to reduce any impacts associated with dust from construction activity.

6.3.6 HISTORIC, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

The National Historic Preservation Act (NHPA) of 1966 requires that an initial review be made to determine if any properties that are included or eligible for inclusion in the NRHP are within the area of a proposed action's potential effects. Section 106 of the NHPA directs that any sponsor of a federally assisted undertaking "take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register."

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8 7 U.S.C. 4201 and 7 CFR, Chapter VI, Part 658, *Farmland Protection Policy Act*.

9 United States Environmental Protection Agency, *Nonattainment Areas for Criteria Pollutants*, https://www.epa.gov/green-book (accessed June 6, 2017).

The Archeological and Historic Preservation Act of 1974 provides for the survey, recovery, and preservation of significant scientific, prehistoric, historical, archeological, or paleontological data when such data may be destroyed or irreparably lost due to a federal, federally licensed, or federally funded project.

A review of the NRHP database[10] shows one historical resource: East Martello Tower.

East Martello Tower is located at 3501 South Roosevelt Boulevard near the entrance to the Airport; it is a publicly owned historic resource that is located on EYW property. The parcel containing the East Martello Tower is leased from the County by the Key West Art & Historical Society. The East Martello Tower was listed in the NRHP in 1972.

There are no other NRHP-listed historical properties located at EYW or within one-half mile of the Airport boundary. Prior studies at the Airport indicate there is one other non-NRHP recorded historic resource on-Airport: the East Martello Battery Bunker.[11] This site, however, is not within the development area of future projects defined within this MPU.

Although there are no known historic, architectural, archaeological, or cultural resources that would be affected by on-Airport development, if ground-disturbing activities resulting from the implementation of any development uncover historic and/or archaeologically significant materials, then work must stop immediately, and the City must take all reasonable measures to avoid or minimize harm to the property. Work would not proceed until the State Historic Preservation Office determines that appropriate measures have been taken to ensure the project is in compliance with the NHPA.

6.3.7 BIOTIC RESOURCES (INCLUDING FISH, WILDLIFE, AND PLANTS)

6.3.7.1 Critical Habitat

The Airport is located within a USFWS-designated critical habitat area (Staghorn coral and Elkhorn coral), defined within the Endangered Species Act as "a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection." Activities that involve federal permitting must determine if a proposed action under its purview would affect a federally listed species or habitat critical to the species.

6.3.7.2 Threatened and Endangered Species

Table 6.3-1 lists the state and federal listed plant and animal species known to exist in Monroe County, as listed within the U.S. Fish & Wildlife Environmental Conservation database. As previously noted, activities that involve

[10] National Park Service, National Register of Historic Places, https://www.nps.gov/maps/full.html?mapId=7ad17cc9-b808-4ff8-a2f9-a99909164466 (accessed June 6, 2017).

[11] URS Corporation and Monroe County Board of County Commissioners, *Final Environmental Assessment for Proposed Runway Safety Area Improvements*, July 23, 2007 (prepared for the Federal Aviation Administration).

federal permitting must determine if a proposed action under its purview would affect a federally listed species or habitat critical to the species.

6.3.8 HAZARDOUS MATERIALS AND SOLID WASTE

6.3.8.1 Hazardous Materials

Federal, state, and local laws regulate hazardous material use, storage, transport, and disposal. These laws may extend to past and future landowners of properties containing these materials. In addition, disrupting sites containing hazardous materials or contaminants may cause significant impacts to soil, surface water, groundwater, air quality, and the organisms using these resources. These include: the Resource Conservation and Recovery Act; the Comprehensive Environmental Response, Compensation, and Liability Act; the Clean Air Act; the Clean Water Act; the Safe Drinking Water Act; and the Hazardous Materials Transportation Act. These regulations govern the storage, use, transportation, and, with contaminated sites, the recovery, mitigation, and cleanup activities.

Federal and state regulatory agency records did not reveal any sites or facilities near the proposed projects that are included on the EPA National Priorities List for sites with known releases or threatened releases of hazardous substances.[12] The FDEP administers and enforces federal hazardous materials regulations. Based on a review of the FDEP's Contamination Locator Map,[13] there are three petroleum cleanup sites located south of the Airport terminal within and adjacent to the existing vehicle parking areas. **Table 6.3-2** lists the site location, identification reference, and status of cleanup.

[12] United States Environmental Protection Agency, NPL Site Status Information, https://www.epa.gov/superfund/npl-site-status-information (accessed June 7, 2017); Florida Department of Environmental Protection, Waste Cleanup Program, http://www.dep.state.fl.us/waste/categories/wc/pages/npl_1199.htm (accessed June 7, 2017).

[13] Florida Department of Environmental Protection, Contamination Locator Map, http://prodenv.dep.state.fl.us/DepClnup/viewmap.do (accessed June 7, 2017).

Table 6.3-1: Monroe County Endangered and Threatened Species

GROUP	COMMON NAME	FORMAL NAME	STATUS
Birds			
	Everglade snail kite	*Rostrhamus sociabilis plumbeus*	Endangered
	Cape Sable seaside sparrow	*Ammodramus maritimus mirabilis*	Endangered
	Bachman's warbler	*Vermivora bachmanii*	Endangered
	Wood stork	*Mycteria americana*	Threatened
	Audubon's crested caracara	*Polyborus plancus audubonii*	Threatened
	Piping plover	*Charadrius melodus*	Threatened
	Roseate tern	*Sterna dougallii dougallii*	Threatened
	Red knot	*Calidris canutus rufa*	Threatened
Fishes			
	Atlantic sturgeon	*Acipenser oxyrinchus desotoi*	Threatened
Plants			
	Blodgett's silverbush	*Argythamnia blodgettii*	Threatened
	Big pine partridge pea	*Chamaecrista lineata keyensis*	Endangered
	Wedge spurge	*Chamaesyce deltoidea serpyllum*	Endangered
	Sand flax	*Linum arenicola*	Endangered
	Garber's spurge	*Chamaesyce garberi*	Threatened
	Florida pineland crabgrass	*Digitaria pauciflora*	Proposed Threatened
	Key tree cactus	*Pilosocereus robinii*	Endangered
	Cape Sable thoroughwort	*Chromolaena frustrata*	Endangered
	Florida prairie-clover	*Dalea carthagenensis floridana*	Proposed Endangered
	Florida semaphore cactus	*Consolea corallicola*	Endangered
	Everglades bully	*Sideroxylon reclinatum ssp. austrofloridense*	Proposed Threatened
Insects			
	Schaus swallowtail butterfly	*Heraclides aristodemus ponceanus*	Endangered
	Miami blue butterfly	*Cyclargus thomasi bethunebakeri*	Endangered
	Bartram's hairstreak butterfly	*Strymon acis bartrami*	Endangered
	Florida leafwing butterfly	*Anaea troglodyta floridalis*	Endangered
Mammals			
	Florida panther	*Puma concolor coryi*	Endangered
	Rice rat	*Oryzomys palustris natator*	Endangered
	West Indian manatee	*Trichechus manatus*	Threatened
	Key Largo cotton mouse	*Peromyscus gossypinus allapaticola*	Endangered
	Key Largo woodrat	*Neotoma floridana smalli*	Endangered
	Lower Keys marsh rabbit	*Sylvilagus palustris hefneri*	Endangered
	Puma (i.e., mountain lion)	*puma concolor* (all subsp. except *coryi*)	Threatened
Reptiles			
	American alligator	*Alligator mississippiensis*	Threatened
	Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered
	Leatherback sea turtle	*Dermochelys coriacea*	Endangered
	Loggerhead sea turtle	*Caretta caretta*	Threatened
	Eastern indigo snake	*Drymarchon corais couperi*	Threatened
	American crocodile	*Crocodylus acutus*	Threatened
	Gopher tortoise	*Gopherus polyphemus*	Candidate
Snails			
	Stock Island tree snail	*Orthalicus reses* (not incl. *nesodryas*)	Threatened

SOURCE: United States Fish & Wildlife Service, Environmental Conservation Online System, https://ecos.fws.gov/ecp0/reports/species-by-current-range-county?fips=12087 (accessed June 15, 2017).

PREPARED BY: Ricondo & Associates, Inc., June 2017.

Table 6.3-2: Key West International Airport Petroleum Cleanup Sites

SITE NAME	SITE ADDRESS	FACILITY ID	STATUS
Signature Flight Support	3471 S. Roosevelt Blvd.	8624743	Site Rehabilitation Completed[1/]
Monroe County–Key West Intl Airport	3491 S. Roosevelt Blvd.	8511825	Pending[2/]
Monroe County–Public Works Div Key West	3583 S. Roosevelt Blvd.	8624745	Active Petroleum Cleanup

NOTES:

1/ Florida Department of Environmental Protection, Site Rehabilitation Completion Order, FDEP Facility ID No. 8624743, March 8, 2016.

2/ No cleanup/remediation documents present in FDEP electronic documents database.

SOURCE: Florida Department of Environmental Protection, Contamination Locator Map and Cleanup Facility Electronic Documents Listing, http://prodenv.dep.state.fl.us/DepClnup/viewmap.do (accessed June 7, 2017).

PREPARED BY: Ricondo & Associates, Inc., June 2017.

The Airport's MPU preferred development projects, listed in Table 6.1-1, that are in the general vicinity of the active petroleum cleanup site No. 5624745 and the pending site No. 8511825 include:

Site No. 8511825 located at 3491 S. Roosevelt Boulevard:

- Consolidated Rental Car Expansion
- Greyhound Bus Relocation Alternative 2
- General Aviation Access Road Construction
- Commercial Curb Enhancement
- Terminal Expansion

Site No. 8624745 located at 3583 S. Roosevelt Boulevard:

- Public Parking Expansion
- Greyhound Bus Relocation Alternative 1

If any hazardous materials are encountered during project construction, then treatment, storage, transportation, and disposal of any such materials would be conducted in accordance with all applicable local, state, and federal regulations.

6.3.8.2 Waste Management

FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*, would require an analysis of the following: future projects and their associated solid waste impacts relative to waste from the airfield development; waste from terminal area development, and the location of local waste disposal facilities. There are no landfills located near the Airport or within the City of Key West. Solid waste is currently handled by the local transfer station and disposed of outside the County.

6.3.9 COMPATIBLE LAND USE

The FAA established guidelines, published in 14 CFR Part 150,[14] for the compatibility of residential, institutional, commercial, industrial, and recreational land uses exposed to various levels of aircraft noise. Most land uses are compatible with noise exposure below DNL 65 (expressed in A-weighted decibels [dBA][15]) and are noncompatible with noise exposure of DNL 75 dBA and higher. Noise-sensitive land uses, such as residential, schools and libraries, and religious facilities, are considered noncompatible with aircraft noise of DNL 65 dBA and higher.

Existing land uses surrounding Airport property are discussed in Section 2.8. As stated, the majority of the existing land uses adjacent to the Airport are designated by the City as open-space conservation lands, which will prevent potential encroachment of noncompatible land uses within areas that are exposed to aircraft noise of DNL 65 dBA and higher.

There are currently 15 existing residential areas exposed to aircraft noise of DNL 65 dBA and higher. However, EYW has continually sought approval and funding from the FAA to eliminate noncompatible land uses. This began with the FAA approval of the Policies & Procedures for a Noise Insulation Program (NIP) contained in the Airport's Noise Compatibility Program (NCP) in 1999. Since then 297 homes and 17 condominiums have been insulated.

The Part 150's NCP which was approved by the FAA in March 2015, contained an updated NIP to insulate homes that fall within EYW's updated 2013 65 dBA and higher noise contours. EYW's capital improvement plan also contains projects seeking FAA funding for the design and insulation of the homes identified to be noncompatible. It is anticipated that future compatible land use issues stemming from noise will be addressed in subsequent Part 150 Study updates. The BOCC also established an Ad Hoc Committee on Noise in 1995, this committee continues to meet four times a year to provide insight and recommendations on noise.

6.3.10 CONSTRUCTION IMPACTS

Impacts associated with construction activity include noise generated by construction equipment at the site and the increased vehicular traffic related to the delivery of construction materials through the local transportation network, the disposal of soil, air pollution from construction equipment exhaust and dust, and water pollution from erosion.

These impacts would be mitigated, to the extent possible, by incorporating the provisions of FAA AC 150/5370-10, *Standards for Specifying Construction of Airports*, *Item P-156, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control*, in the project specifications.

For water quality, each project would be required to adhere to the applicable Stormwater Pollution Prevention Plan of the Airport. For those projects where construction could take place in proximity to residential areas, this

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[14] 14 CFR Part 150, *Airport Noise Compatibility Planning*.

[15] A-weighting is focused on the frequencies of sound perceptible to the human ear; therefore, it reflects actual sound levels as they are heard by humans.

construction would be subject to local noise ordinances. Major roadways border the Airport; therefore, construction traffic would likely avoid residential areas. Construction impacts would be evaluated as part of any NEPA analysis required, prior to constructing any of the proposed development projects.

6.3.11 SOCIOECONOMIC IMPACTS

The areas that would be affected by the scope of the preferred development alternative are contained within the Airport property boundaries and areas designated for Airport-related activities. Therefore, there are no anticipated highly adverse impacts on minority or low-income populations. Also, there are no anticipated impacts or disproportionate risks to children resulting from environmental health or safety risks.

6.3.12 NOISE

As part of the MPU, noise contours were prepared for the following scenarios:

- Existing Conditions, using the baseline year of 2015
- Future Conditions, using the forecasts for 2025 and 2035

This technical section regarding noise analysis describes the methodology used to develop the contours and the resulting noise exposure levels in the vicinity of the Airport. The noise contours were prepared for informational and planning purposes only, and they are not intended to be used for 14 CFR Part 150 Noise Exposure Maps, or the Airport's Noise Compatibility Program. The noise analysis resulted in noise contours associated with the forecast aeronautical activity at the Airport.

6.3.12.1 Methodology

The noise contour maps were developed using the FAA Aviation Environmental Design Tool (AEDT) Version 2d. The AEDT was developed by the FAA using methods and calculations from SAE International's Aerospace Information Report (AIR) 1845, *Procedure for the Calculation of Airplane Noise in the Vicinity of Airports*.

The AEDT produces aircraft noise contours that delineate areas of equal DNL. The AEDT works by defining a network of grid points at ground level around an airport. It then selects the shortest distance from each grid point to each flight track and computes the noise exposure generated by each aircraft operation, along each flight track. Corrections are applied for atmospheric acoustical attenuation, acoustical shielding of the aircraft engines by the aircraft itself, and aircraft speed variations. The noise exposure levels for each aircraft are then summed at each grid location. The cumulative noise exposure levels at all grid points are then used to develop noise exposure contours for selected values (e.g., DNL 65, 70, and 75 dBA). Using the results of the grid point analysis, noise contours of equal noise exposure can then be plotted.

The DNL is a 24-hour time-weighted sound level that is expressed in A-weighted decibels and is abbreviated as dBA. The FAA, and other federal agencies, use DNL as the primary measure of noise impact because: it correlates well with the results of attitudinal surveys regarding noise; it increases with the duration of noise events; and it accounts for an increased sensitivity to noise at night by increasing each noise event that occurs during nighttime hours (i.e., 10 p.m. to 7 a.m.) by 10 dBA.

In Appendix A of 14 CFR Part 150, the FAA identifies, as a function of yearly (365-day average) DNL value, land uses that are compatible and land uses that are not compatible in an airport environs. As shown in **Table 6.3-3**, the FAA considers all land uses to be compatible with aircraft noise if the DNL is less than 65 dBA.

FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*,[16] stipulates that the AEDT is to be used to provide noise exposure contours at the DNL 65, 70, and 75 dBA levels. Accordingly, this report includes documentation of DNL contours, in addition to flight tracks, for the existing conditions and future conditions.

6.3.12.2 Baseline Conditions (2015)

This section details the development of noise contours for the baseline 2015 conditions. The data used as input to the AEDT for the year 2015 were the following:

- runway layout and use
- number of aircraft operations
- operational time-of-day
- aircraft fleet mix
- flight tracks and profiles

Runway Layout and Use

The 2015 baseline conditions assumed a runway length of 4,801 feet[17]. Of the two runway ends, Runway 9 was used predominantly (80 percent of operations annually) versus Runway 27, which was used for 20 percent of operations.

Aircraft Operations

Forecasts of operations by aircraft type were prepared as part of the EYW MPU for the 2015 base year. The overall forecast of aviation activity was divided into categories of aircraft. **Table 6.3-4** lists the 2015 aircraft operations by category. As shown, in 2015 there were 53,548 operations at EYW (an average of approximately 147 operations per day). An aircraft operation is defined as either one arrival or one departure. A touch-and-go operation—an arrival of an aircraft and the departure of the same aircraft—is defined as two operations.

16 Federal Aviation Administration, Order 1050.1F, Appendix B, Section B-1.4, July 2015.

17 The use of the pavement area between the Runway 9 end and EMAS only became operational in late 2018.

Table 6.3-3: Land Use Compatibility

	DNL EXPRESSED IN DB(A)					
LAND USE	**BELOW 65**	**65–70**	**70–75**	**75–80**	**80–85**	**OVER 85**
Residential						
Residential, other than mobile homes and transient lodgings	Y	N[1/]	N[1/]	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N[1/]	N[1/]	N[1/]	N	N
Public Use						
Schools	Y	N[1/]	N[1/]	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y[2/]	Y[3/]	Y[4/]	Y[4/]
Parking	Y	Y	Y[2/]	Y[3/]	Y[4/]	N
Commercial Use						
Offices, business, and professional	Y	Y	25	30	N	N
Wholesale and retail—building materials, hardware, and farm equipment	Y	Y	Y[2/]	Y[3/]	Y[4/]	N
Retail trade—general	Y	Y	25	30	N	N
Utilities	Y	Y	Y[2/]	Y[3/]	Y[4/]	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y[2/]	Y[3/]	Y[4/]	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y[6/]	Y[7/]	Y[8/]	Y[8/]	Y[8/]
Livestock farming and breeding	Y	Y[6/]	Y[7/]	N	N	N
Mining and fishing, resource production, and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y[5/]	Y[5/]	N	N	N
Outdoor music shells and amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

NOTES:

DNL – Day-Night Average Sound Level

DB(A) – A-Weighted Decibels

Y (Yes) – Land use and related structures compatible without restrictions. N (No) – Land use and related structures are not compatible and should be prohibited. NLR (Noise Level Reduction) – Outdoor to indoor; to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35 – Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dBA must be incorporated into design and construction of structure.

1/ Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 dBA and 30 dBA should be incorporated into building codes and should be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dBA; thus, the reduction requirements are often stated as 5, 10, or 15 dBA over standard construction and normally assume mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems.

2/ Measures to achieve NLR 25 dBA must be incorporated into the design and construction of portions of these buildings where the public is received, as well as office areas, noise sensitive areas, or where the normal noise level is low.

3/ Measures to achieve NLR of 30 dBA must be incorporated into the design and construction of portions of these buildings where the public is received, as well as office areas, noise sensitive areas, or where the normal noise level is low.

4/ Measures to achieve NLR 35 dBA must be incorporated into the design and construction of portions of these buildings where the public is received, as well as office areas, noise sensitive areas, or where the normal level is low.

5/ Land use compatible if special sound reinforcement systems are installed.

6/ Residential buildings require an NLR of 25.

7/ Residential buildings require an NLR of 30.

8/ Residential buildings not permitted.

SOURCE: Title 14 Code of Federal Regulations (CFR) Part 150, *Airport Noise Compatibility Planning.*

PREPARED BY: KB Environmental Sciences, Inc., September 2017.

Table 6.3-4: 2015 Aircraft Operations by Category

OPERATOR CATEGORY	AIRCRAFT CATEGORY	OPERATIONS
Passenger	Small Piston/Turboprop/Regional Jet	10,204
	Medium Regional Jet/Turboprop	1,527
	Large Regional Jet/Turboprop	4,399
	Small Narrowbody	2,521
	Medium Narrowbody	0
	Large Narrowbody/Widebody	0
	Subtotal	**18,651**
Cargo	**Subtotal** (Small Piston/Turboprop)	**729**
General Aviation	Single Engine	20,716
	Multi-Engine	5,436
	Jet	1,974
	Rotorcraft	486
	Other	0
	Subtotal	**28,612**
Military	**Subtotal**	**676**
Other Air Taxi	**Subtotal**	**4,880**
	Total	**53,548**

NOTE: Operations are subject to rounding.
PREPARED BY: KB Environmental Sciences, Inc., September 2017.

Operational Time-of-Day

As previously stated, DNL is calculated such that aircraft operations that occur after 10 p.m. and before 7 a.m. (i.e., during the nighttime) are penalized by the addition of 10 dBA to each operation. Based on discussions with Airport staff, it was estimated that approximately 15 percent of the operations at the Airport occur during the nighttime hours.

Fleet Mix

The AEDT includes several individual aircraft types, as well as several FAA-approved substitute aircraft. The fleet mix was developed from the model inputs in the EYW 14 CFR Part 150 Study, which was conducted in 2013. The fleet mix information was updated to reflect the activity forecasts for 2015, as defined for the MPU. **Table 6.3-5** presents the 2015 AEDT aircraft operations and fleet mix.

Table 6.3-5: 2015 Aviation Environmental Design Tool Aircraft Fleet Mix

CATEGORY	AIRCRAFT ID	OPERATIONS
Jet	737700	6,018
	CL600	1,307
	EMB145	1,148
	CNA55B	1,069
	CNA500	954
	IA1125	494
	LEAR35	446
	CNA750	394
	CNA560U	310
	ECLIPSE500	219
	CNA510	179
	CIT3	164
	CNA680	134
	GIV	126
	GV	76
	A319-131	12
	LEAR25	9
	F16PW0	6
	F-18	6
Multi-Engine Prop	BEC58P	4,431
	PA30	1,849
Single-Engine Prop	CNA172	8,344
	GASEPV	5,928
	COMSEP	3,266
	GASEPF	2,223
	CNA20T	562
	T34	17
Turboprop	SF340	7,480
	CNA208	2,678
	CNA441	1,551
	DHC6	1,458
	C130	118
	PA42	51
	DHC8	18
	P3A	13
	HS748A	2
Helicopter	EC130	171
	S70	136
	A109	128
	B206L	26
	R44	26
Total		**53,548**

NOTE: Operations are subject to rounding.

SOURCES: URS Corporation, Noise Compatibility Program for the Part 150 Study, March 2015; Federal Aviation Administration, Traffic Flow Management System Counts (TFMSC), 2017.

PREPARED BY: KB Environmental Sciences, Inc., September 2017.

Flight Tracks and Profiles

The AEDT uses Airport-specific ground tracks and vertical flight profiles to compute three-dimensional flight paths for each modeled aircraft. The "default" AEDT vertical profiles, which consist of altitude, speed, and thrust settings, are compiled from data provided by aircraft manufacturers.

The location of flight paths is an important factor in determining the geographic distribution of noise contours on the ground. **Exhibit 6.3-3** and **Exhibit 6.3-4** show the itinerant AEDT flight tracks. **Exhibit 6.3-5** shows the local touch-and-go tracks. These flight tracks were originally developed in 2013 as part of the 14 CFR Part 150 Study, and they were verified as being representative of 2015 conditions.

2015 Existing DNL Contours

Exhibit 6.3-6 shows the 2015 DNL contours. **Table 6.3-6** provides the area, in acres, of each contour interval (i.e., DNL 65–69 dBA, DNL 70–74 dBA, and DNL 75 dBA and greater). As shown, the total area encompassed by the DNL 65 dBA contour is 428 acres.

Table 6.3-6: 2015 Day-Night Average Sound Level Contour Areas

DNL –DB(A)	AREA –ACRES
65 to <70	252
70 to <75	97
75 and greater	79
Total	**428**

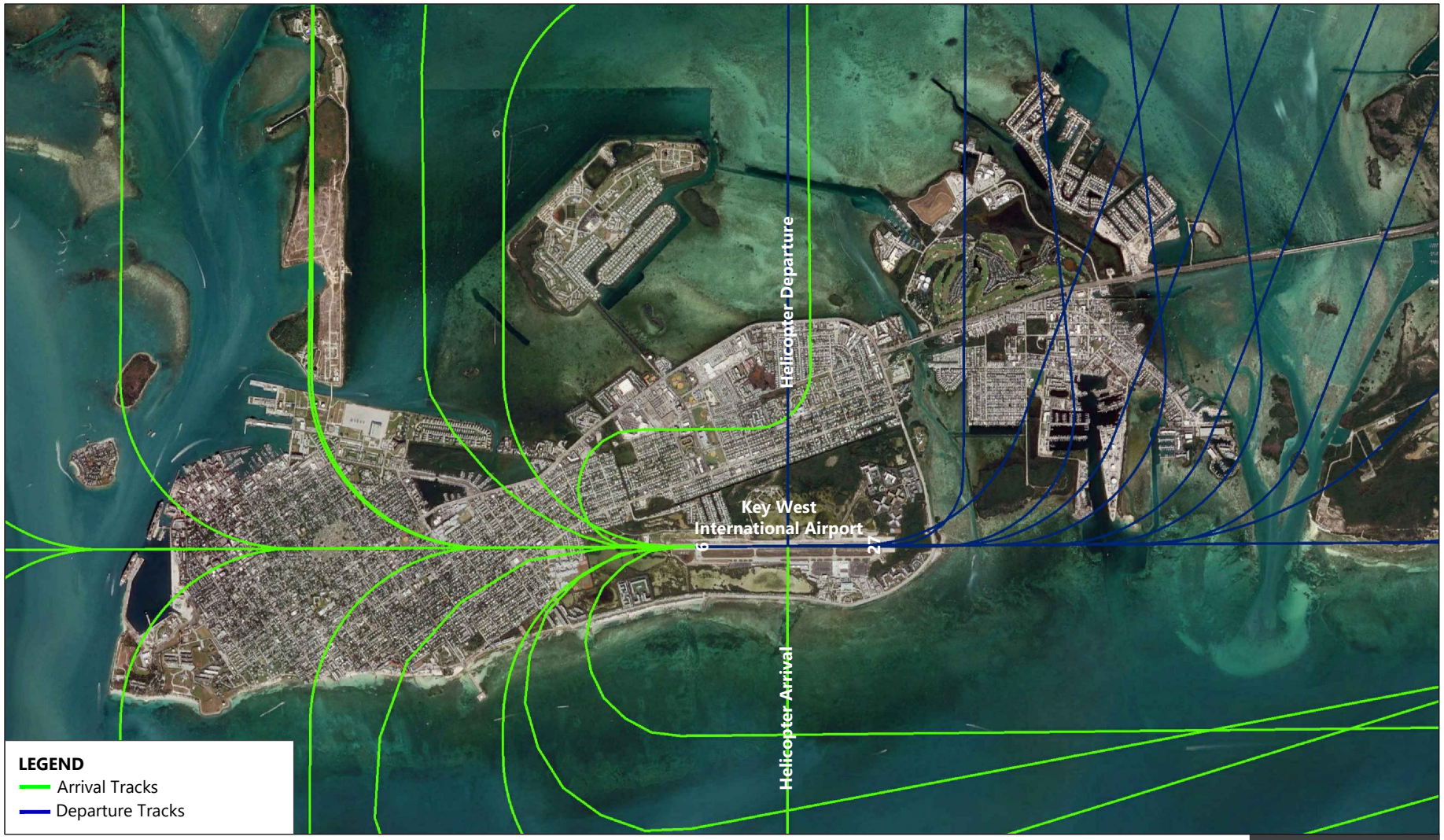
NOTES: dB(A) – A-Weighted Decibels; DNL – Day-Night Average Sound Level
SOURCE: KB Environmental Sciences, Inc., September 2017.

6.3.12.3 Future Conditions (2025 and 2035)

This section discusses the input data for the future 2025 and 2035 conditions and the resulting DNL contours. The future 2025 and 2035 conditions included the same runway layout and use, flight tracks, and profiles as the existing conditions. However, the 2025 and 2035 aircraft operations and fleet mix were defined using the MPU's aviation activity forecast.

Runway Layout and Use

The airfield configuration modeled for the 2025 conditions were the same as the existing conditions, with only one exception. It is anticipated that the Airport will use an existing overrun pavement area to provide additional takeoff distance for Runway 9 (for a total available distance of 5,075 feet). Under this plan, all aircraft will take off from a new point on Runway 9; however, arrivals to Runway 9 will not change touchdown location. The start of takeoff roll will be 140 feet farther west than the current Runway 9 departure threshold; this change was modeled in AEDT for all departure tracks from Runway 9. The 2035 airfield configuration also assumes the extension of the runway 200 feet to the east. Also, of note, runway use for both future conditions were the same as the existing conditions.



SOURCE: KB Environmental Sciences, Inc.; AEDT 2C SP2; Esri; DigitalGlobe; GeoEye; Earthstar Geographics; CNES/Airbus DS; USDA; USGS; AEX; Getmapping; Aerogrid; IGN; IGP; Swisstopo; GIS User Community; September 2017; Google Earth, April 2018 (aerial photography).
PREPARED BY: Ricondo & Associates, Inc., April 2018.

EXHIBIT 6.3-3

NORTH 0 □□t t□ S□□□

Aircraft Flight Tracks - East Flow

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\207 - Environmental Overview\CAD\EYW Environmental Overview Exhibits.dwgLayout: East Flow Plotted: Jun 12, 2020, 07:36AM



SOURCE: KB Environmental Sciences, Inc.; AEDT 2C SP2; Esri; DigitalGlobe; GeoEye; Earthstar Geographics; CNES/Airbus DS; USDA; USGS; AEX; Getmapping; Aerogrid; IGN; IGP; Swisstopo; GIS User Community; September 2017; Google Earth, April 2018 (aerial photography).
PREPARED BY: Ricondo & Associates, Inc., April 2018.

EXHIBIT 6.3-4

NORTH 0 □□t□ S□□□□

Aircraft Flight Tracks - West Flow

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\207 - Environmental Overview\CAD\EYW Environmental Overview Exhibits.dwgLayout: West Flow Plotted: Jun 12, 2020, 07:36AM



SOURCE: KB Environmental Sciences, Inc.; AEDT 2C SP2; Esri; DigitalGlobe; GeoEye; Earthstar Geographics; CNES/Airbus DS; USDA; USGS; AEX; Getmapping; Aerogrid; IGN; IGP; Swisstopo; GIS User Community; September 2017; Google Earth, April 2018 (aerial photography).
PREPARED BY: Ricondo & Associates, Inc., April 2018.

EXHIBIT 6.3-5

NORTH 0

Local Flight Tracks

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\207 - Environmental Overview\CAD\EYW Environmental Overview Exhibits.dwgLayout: Local Tracks Plotted: Jun 12, 2020, 07:38AM



SOURCE: KB Environmental Sciences, Inc.; AEDT 2C SP2; Esri; DigitalGlobe; GeoEye; Earthstar Geographics; CNES/Airbus DS; USDA; USGS; AEX; Getmapping; Aerogrid; IGN; IGP; Swisstopo; GIS User Community; September 2017; Google Earth, April 2018 (aerial photography).
PREPARED BY: Ricondo & Associates, Inc., April 2018.

EXHIBIT 6.3-6

NORTH 0 2□000 F□□t

Future 2015 Day-Night Average Sound Level Contours

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\207 - Environmental Overview\CAD\EYW Environmental Overview Exhibits.dwgLayout: 2015 DNL Plotted: Jun 12, 2020, 08:06AM

Aircraft Operations

As part of the MPU, a forecast of operations was prepared for the years 2025 and 2035. **Table 6.3-7** presents the forecast of operations for both years by aircraft category. As shown, the 2025 forecast includes 62,920 operations at EYW (an average of approximately 172 operations per day). The 2035 forecast includes 69,435 operations at EYW (an average of approximately 190 operations per day).

Table 6.3-7: 2025 and 2035 Aircraft Operations by Category

OPERATOR CATEGORY	AIRCRAFT TYPES	2025 OPERATIONS	2035 OPERATIONS
	Small Piston/Turboprop/Regional Jet	10,525	1,588
	Medium Regional Jet/Turboprop	2,649	11,022
	Large Regional Jet/Turboprop	5,061	5,337
	Small Narrowbody	2,985	1,531
	Medium Narrowbody	1,612	5,020
	Large Narrowbody/Widebody	0	0
Passenger	**Subtotal**	**22,832**	**24,498**
Cargo	**Subtotal** (Small Piston/Turboprop)	**984**	**1,247**
	Single Engine	21,180	21,612
	Multi-Engine	7,705	10,569
	Jet	2,901	3,668
	Rotorcraft	451	472
	Other	0	0
General Aviation	**Subtotal**	**32,237**	**36,321**
Military	**Subtotal**	**676**	**676**
Other Air Taxi	**Subtotal**	**6,191**	**6,693**
	Total	**62,920**	**69,435**

NOTE: Operations are subject to rounding.
PREPARED BY: KB Environmental Sciences, Inc., September 2017.

Operational Time-of-Day

The percentages of nighttime operations for the future conditions were maintained at a similar level as the existing conditions.

Fleet Mix

The future conditions aircraft fleet mixes were determined by multiplying the existing condition percentages by aircraft type by the total operations forecast for 2025 and 2035. **Table 6.3-8** lists the future aircraft operations and fleet mixes.

Table 6.3-8: 2025 and 2035 Aircraft Operations and Aviation Environmental Design Tool Fleet Mix

CATEGORY	AIRCRAFT ID	2025 OPERATIONS	2035 OPERATIONS
Jet	EMB175	5,061	5,337
	A319-131	2,985	1,531
	EMB170	2,103	8,749
	737700	1,612	5,020
	EMB145	1,082	163
	CNA55B	1,039	1,314
	CL600	813	2,582
	CNA750	508	228
	LEAR35	344	436
	CNA560U	276	349
	IA1125	276	349
	CNA500	208	263
	ECLIPSE500	140	176
	CNA680	126	19
	CIT3	68	86
	CNA510	68	86
	GIV	68	86
	F16PW0	6	6
	F-18	6	6
Multi-Engine Prop	BEC58P	8,951	11,021
	PA30	4,945	6,241
Single-Engine Prop	CNA172	5,697	5,814
	GASEPF	4,067	4,150
	COMSEP	3,664	3,739
	GASEPV	2,859	2,918
	T34	17	17
Turboprop	SF340	7,050	1,064
	CNA208	5,877	6,239
	DHC6	1,374	207
	C130	591	570
	DHC8	245	76
	CNA441	212	32
	P3A	81	81
	PA42	48	7
Helicopter	EC130	158	166
	S70	127	132
	A109	119	124
	B206L	24	25
	R44	24	25
Total		**62,920**	**69,435**

NOTE: Operations are subject to rounding.
SOURCE: KB Environmental Sciences, Inc., (based upon Ricondo & Associates, Inc., *Airport Master Plan Update, Aviation Activity Forecasts*, July 2016), September 2017.

Flight Tracks

The flight tracks for the future conditions modeled were the same as those for the existing 2015 conditions. Flight track use was maintained at similar levels as the existing conditions.

2025 and 2035 DNL Contours

Exhibit 6.3-7 and **Exhibit 6.3-8** show the 2025 and 2035 DNL contours. **Table 6.3-7** provides the area, in acres, of each contour interval. The 2025 area located within the 65 DNL contour is 146 acres larger, or approximately 34 percent, than the 428 acres encompassed by the 2015 noise contour. In 2035, the 65 DNL is 60 percent larger, an increase of 207 acres as compared to 2015.

Table 6.3-9: 2025 and 2035 Day-Night Average Sound Level Contour Areas

	2025	2035
DNL – DB(A)	**AREA – ACRES**	**AREA – ACRES**
65 to <70	344	382
70 to <75	132	145
75 and greater	98	107
Total	**574**	**635**

NOTES:

dB(A) – A-Weighted Decibels

DNL – Day-Night Average Sound Level
SOURCE: KB Environmental Sciences, Inc., March 2019.

6.3.12.4 Conclusion

As part of the Airport's MPU, a noise analysis was prepared to identify the noise exposure from the baseline 2015 condition and the future 2025 and 2035 conditions. In all three noise contour maps, residences were identified within the limits of the DNL 65 dBA contour—based on a visual inspection of aerial imagery (see Exhibits 6.3-4, 6.3-5, and 6.3-6). The noise contours were prepared for informational and planning purposes only, and they are not intended to be used for the purposes of 14 CFR Part 150. They are, however, a useful tool to gauge the need for and timing of a potential Part 150 update. It should be noted, the increase in size of the 65 DNL noise contour is largely attributed to a modest increase in operational activity, rather than a change in fleet mix or major runway extension. Therefore, the operational levels presented above will be useful in determining the potential timing for updated noise analysis.



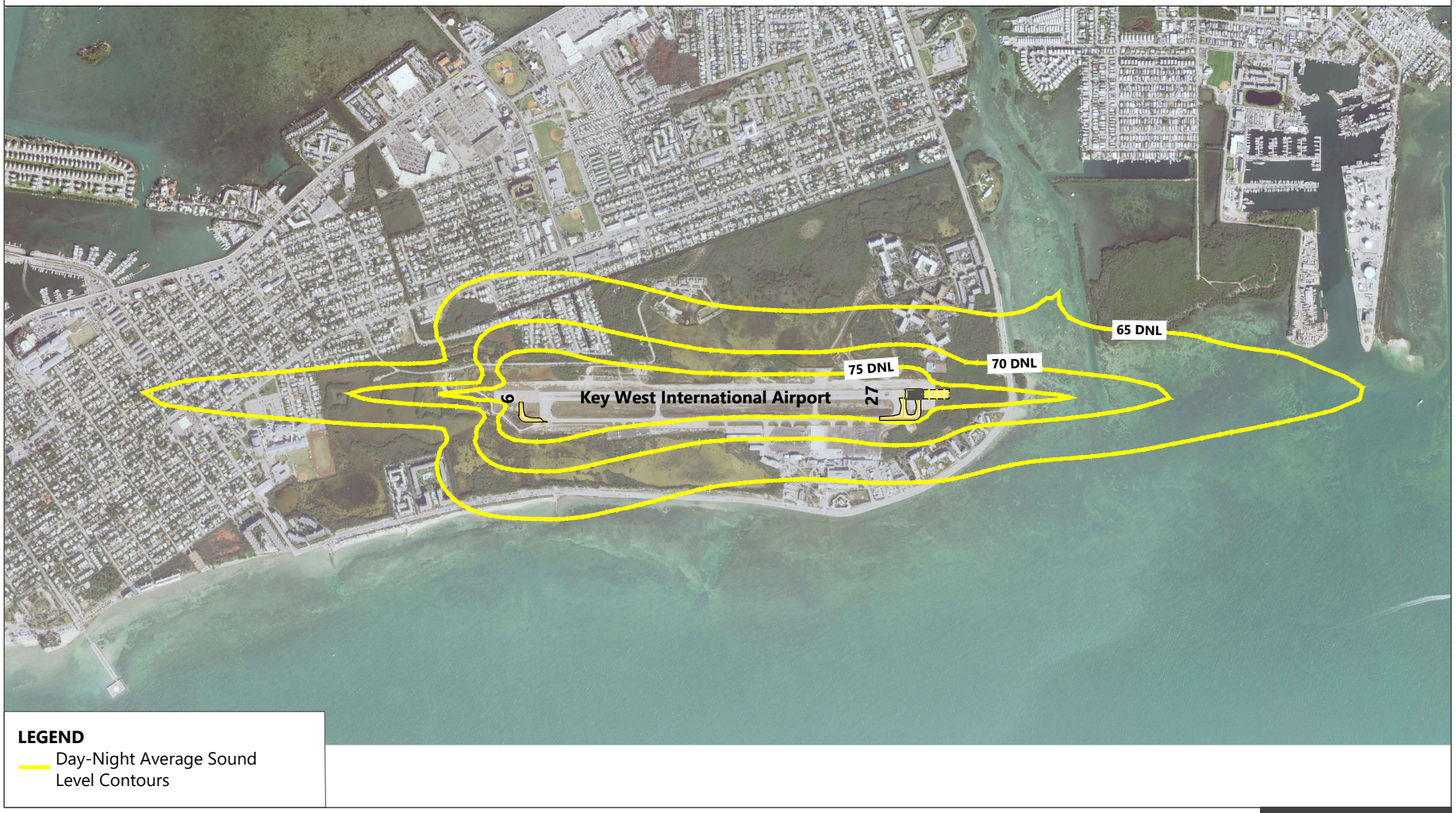
SOURCE: KB Environmental Sciences, Inc.; AEDT 2C SP2; Esri; DigitalGlobe; GeoEye; Earthstar Geographics; CNES/Airbus DS; USDA; USGS; AEX; Getmapping; Aerogrid; IGN; IGP; Swisstopo; GIS User Community; September 2017; Google Earth, April 2018 (aerial photography).
PREPARED BY: Ricondo & Associates, Inc., April 2018.

EXHIBIT 6.3-7

NORTH 0 2,000 FT

Future 2025 Day-Night Average Sound Level Contours

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\207 - Environmental Overview\CAD\EYW Environmental Overview Exhibits.dwgLayout: 2025 DNL Plotted: Mar 6, 2019, 10:12AM



SOURCE: KB Environmental Sciences, Inc.; AEDT 2C SP2; Esri; DigitalGlobe; GeoEye; Earthstar Geographics; CNES/Airbus DS; USDA; USGS; AEX; Getmapping; Aerogrid; IGN; IGP; Swisstopo; GIS User Community; September 2017; Google Earth, April 2018 (aerial photography).
PREPARED BY: Ricondo & Associates, Inc., April 2018.

EXHIBIT 6.3-8

NORTH 0 2,000 FT

Future 2035 Day-Night Average Sound Level Contours

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\207 - Environmental Overview\CAD\EYW Environmental Overview Exhibits.dwgLayout: 2035 DNL Plotted: Mar 6, 2019, 10:14AM

Chapter 7

Sustainability Initiatives

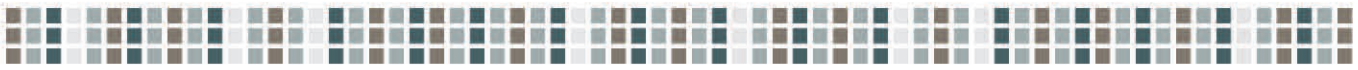


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7. Sustainability Initiatives

7.1 Introduction

Monroe County and the management of the Key West International Airport recognize and embrace the importance that the growing role of sustainability has in the national air transportation system. The Monroe County Airports Department (Airports Department) also understands the benefits that sustainability planning has outside of environmental considerations. Sustainability planning generally recognizes four categories: **E**conomic prosperity, **O**perational efficiency, **N**atural resource conservation, and **S**ocial responsibility—otherwise known as **EONS**. Airports also pursue those aspects of sustainability that meet the needs, values, and characteristics of the airport environment, as well as surrounding municipalities.

The sustainability plan presented in this document provide a framework for the Airports Department to evaluate their current conditions relative to sustainability; identify the aspects of EONS that warrant a higher degree of priority; isolate initiatives that allow the Airport to achieve sustainability goals they've identified; and develop a simplified methodology to monitor the effectiveness of chosen sustainability initiatives.

The FDOT has developed sustainability-specific guidance to encourage the state's airports to successfully implement sustainability planning. The development of this guidance is a result of FDOT's goals of driving the state's transportation network toward a highly efficient, economically prosperous, environmentally friendly, and safe future. The sustainability plan that was developed as part of the master plan and presented in this document is consistent with the FDOT guidelines.

7.2 Setting the Stage

Developing a sustainability plan includes agreeing upon a strategy and sustainability definition specific to the Airports Department, evaluating organizational readiness, outlining guiding principles, and identifying key focus areas tailored to the Airport's specific characteristics, values, and needs. This helps to ensure that the sustainability plan is developed in a manner that will help the Airports Department achieve sustainability goals.

7.2.1 SUSTAINABILITY STRATEGY

The Airports Department's sustainability strategy is critical to developing a successful sustainability plan. The Airports Department will pursue sustainability initiatives that align with the economic prosperity, operational

efficiency, environmental friendliness, and social responsibility objectives of the Airports Department. Implementation of the initiatives will occur through the education of staff members at all levels and divisions within the Airport. Airport management will monitor the effectiveness of the plan to ensure that the plan is being implemented systematically, beneficially, and consistently.

This strategy is consistent with FDOT's sustainability guidance, that recommends an organization commit to pursuing the benefits of sustainability at all levels, and establishes the initial framework needed to develop the rest of the sustainability plan.

7.2.2 DEFINITION OF SUSTAINABILITY

The term *sustainability* has been typically assumed to only encompass environmental friendliness. However, the initial intent of sustainability extends beyond environmental friendliness. The FDOT *Airport Sustainability Guidebook* provides clarification on the origin of sustainability and its meaning by referencing the following:

> The National Environmental Policy Act of 1969 committed the United States to sustainability, declaring it a national policy, "to create and maintain conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations."[1]

Accordingly, the Airports Department recognizes the four EONS categories of sustainability. In addition to these categories, the Airports Department believes its specific definition of sustainability requires buy-in from all staff members to ensure the ultimate success of the sustainability plan.

Utilizing the four categories and Monroe County's values for the Airports Department, EYW's unique definition of sustainability is as follows:

"We define sustainability as the adaptation of practices to operate EYW and MTH in a manner that protects the environment and is safe for our employees, neighbors, and customers. It is an active pursuit that extends to all levels of the Airport and thrives on the willingness of the staff to understand and implement its various elements."

7.2.3 AIRPORT READINESS

In evaluating EYW's overall readiness to implement this sustainability plan, the following questions from the FDOT *Airport Sustainability Guidebook* were answered. These questions were developed to help airports of all sizes to evaluate their organizational readiness to undertake sustainability initiatives.

[1] U.S. EPA Learn About Sustainability, https://www.epa.gov/sustainability/learn-about-sustainability (accessed December 18, 2017).

1. Has the Airport implemented any sustainability initiatives?

• Yes, the Airports Department has actively pursued recycling and waste reduction strategies at the Airport. More information on these strategies can be found in the Recycling and Waste Reduction discussion provided in Section 7.5.

2. Does the Airport leadership understand and support the concept of sustainability?

• The Department of Airports leadership is committed to the pursuit of Airport sustainability and intends to collaborate with all Airport staff members to generate Airport-wide motivation and commitment.

3. What aspects of sustainability are most important and applicable to the Airport?

• While all four categories of sustainability are considered important to Monroe County, the Airport's diverse and unique surroundings and proximity to the natural environment make environmental initiatives a priority in sustainability. The Airports Department also intends to pursue social initiatives in an effort to further engage with the County's vibrant community.

4. Does the surrounding municiplaity or county have a sustainability plan/program?

• The City of Key West has numerous sustainability planning initiatives. In 2010, the City Commission enacted the Sustainability Advisory Board that was charged with promoting sustainability of the community as a whole. Additionally, in 2012, the City developed the *Solid Waste Master Plan: Establishing a Pathway to Zero Waste*, which extensively analyzed the City's current recycling system, contracts, and operations. The effort also evaluated potential avenues of recycling programs and initiatives to maximize the City's recycling footprint.

• Monroe County developed the *Green Keys! Sustainability Action Plan* to adress the issues of climate change and sea-level rise. The plan's website further details its directive: "It provides guidance for decision-makers as well as for county employees, residents, and business owners. With 165 recommendations and a 5-year work plan, Greenkeys! is a blueprint for increased sustainability and resilience to climate change"

• It is important to the Airports Department to ensure the efforts and priorities of both the City and the County are included in the development of the Airport's sustainability plan.

5. Are there any organization-wide planning efforts implemented?

• This Master Plan is the primary organization-wide planning process currently taking place at EYW. The Master Plan will support the development of a sustainability framework for the Airport that will identify the Airports Department's vision statedment and focus areas for the Airport.

7.2.4 SUSTAINABILITY VISION STATEMENT

The vision statement serves as the Airport's road map; it was developed as a guide to future sustainability planning. This statement will be used to guide the Airport Department through future steps of implementing and revising sustainability initiatives. As recommended by the FDOT, this vision statement is also intended to help the Airport staff at all levels to develop a sense of pride in the Airport's sustainability initiatives. Accordingly, the Department of Airport's sustainability vision statement is as follows:

"EYW will strive to lead as an example for small-hub airports statewide by collaboratively achieving the goals outlined in the Airport sustainability plan. The Airport will align environmental initiatives with the County to safeguard the surrounding natural environment and be proactive towards consistency with the GreenKeys! Sustainability Action Plan."

7.2.4.1 Sustainability Framework

The final step in setting the stage is to develop the focus areas of the sustainability plan. The focus areas are a set of cascading developmental subjects, geared towards developing the "why" and "how" of the sustainability plan. These topics are discussed in the following sub-sections:

- Focus Areas
- Sustainability Mission Statement
- Sustainability Goals

7.2.4.2 Focus Areas

It is important for airport operators to attain a realistic understanding of which of the four EONS categories are most desirable and achievable based on the specific airport characteristics, the surrounding environs, and organizational objectives. Although it is the intention of the Airports Department to pursue sustainability in all four categories, there are two focus areas that the Airports Department believes could provide the greatest benefits given their unique circumstances.

First, given that EYW is surrounded by one of the country's most diverse, unique, and precious ecosystems, the primary objective of the Airports Department is to achieve a reduced environmental impact through natural resource conservation. Natural resource conservation is a critical environmental resource category in which the City, County, and State have already made commitments. The Airports Department's focus on natural resource conservation is consistent with the sustainability goals set by the surrounding municipalities.

Second, Airports Department leadership has indicated that focusing on social responsibility is an essential element for the sustainability plan. The Airports Department is keenly aware of the importance of the Airport being a good neighbor, and it values its relationship with the neighboring communities.

7.2.4.3 Sustainability Mission Statement

A critical component to every sustainability plan is the Airport's sustainability mission statement. This statement is a projection of the Airport's future in sustainability, similar to the vision statement, that provides a more in-depth explanation of how sustainability will be achieved. Specifically, the FDOT states:

> A mission statement should present the big picture of what the airport would like to achieve. The mission does not need to be explicitly attainable; it should provide an aspirational image. With a mission in place, the airport can identify the goals that will help to achieve this vision.[2]

To aid in the development of the mission statement, ACRP Report 20, *Strategic Planning in the Airport Industry*, recommends answering the following questions:

1. What do we do?
2. For whom do we do it?
3. How do we do it?

The answers to these questions should be short and concise to allow for integration into the sustainability mission statement. EYW serves commercial air passengers wishing to experience the beauty and adventure of the Florida Keys. The Airport performs its services not only for tourists from around the globe but also for the local passengers departing from and returning to their hometown. The Airport's services are achieved by a dedicated staff working ambitiously to coordinate safe and efficient operations. Based on the aforementioned, and considering the Airport's vision statement, the following sustainability mission statement has been established:

"To provide safe aviation facilities at both EYW and MTH while working harmoniously with the county, city, and customers to implement environmental initiatives that protect the environment."

7.2.4.4 Sustainability Goals

To commence the sustainability plan, the Airports Department must produce a set of goals for building the remainder of the plan. The Airports Department's goals are designed to reflect the areas of sustainability the Airports Department wishes to target, and they encompass the mission statement and vision of this sustainability plan. These goals will ultimately shape the establishment of Airports Department initiatives. Over

[2] http://www.florida-aviation-database.com/library/filedownload.aspx?guid=a49fabd0-dd55-4969-b56f-f7e6162e65fd

time, these goals may evolve in accordance with how the Airport evolves. The following are the initial set of goals for the EYW sustainability plan:

1. Reduce nonrecycled waste generated by the Airport.
2. Educate Airport staff on sustainability and recycling.
3. Educate Airport customers on sustainability initiatives.
4. Promote sustainability and recycling to the local community.
5. Improve energy and water-saving strategies.

These goals provide a basic outlook into the future of sustainability at EYW. It is the Airports Department's hope that through this sustainability plan, these goals can be achieved.

7.3 Plan Development

This portion of the sustainability plan defines the developmental phases to help the Airports Department select its sustainability initiatives to achieve the sustainability goals. Additionally, this section includes the identification of specific action items to implement the initiatives. This section also contains details on how the Airports Department will achieve Monroe County's vision of becoming an exemplary small-hub airport for sustainability efforts.

7.3.1 SUSTAINABILITY INITIATIVES

Selecting sustainability initiatives involves assessing the goals and vision of the Airports Department and deciding appropriate and realistic tasks to achieve success. The Airports Department acknowledges the importance of selecting cost-efficient initiatives that have the greatest impact on the organization and its related goals.

To aid in evaluating and selecting initiatives, the Sustainable Aviation Guidance Alliance (SAGA)[3] database was consulted. This database contains a list of nearly 950 sustainability initiatives to help airport operators identify initiatives that meet their specific goals and needs. For purposes of this sustainability plan, the Airports Department has selected several initiatives from the SAGA database, identified in **Table 7.3-1**. Considering the Airport Department's limited resources, these initiatives were selected as they were determined to be realistic and economically feasible. These initiatives will contribute to the Airport's sustainability goals and vision.

[3] Sustainable Aviation Guidance Alliance, http://airportsustainability.org/sustainable-practices (accessed December 18, 2017).

Table 7.3-1: EYW Sustainability Initiatives

NUMBER	DESCRIPTION	EONS CATEGORY
1	Identify an Airport sustainability champion.	All
2	Unplug cell phone chargers, fans, coffeemakers, desktop printers, radios, and other equipment that drains energy when not in use.	Environment Economic
3	Connect monitors, printers, and other accessories to a power strip/surge protector. Turn off the power strip to prevent them from drawing power when they are not in use.	Environment Economic
4	Post no-idling signs in applicable areas.	Environment
5	Provide sustainability awareness training programs, presentations, and/or meetings for employees, consultants, tenants, and contractors.	All
6	Sponsor local community projects that showcase sustainability efforts, such as recycling days and tree plantings.	Environment Social
7	Implement an Airport foreign object debris (FOD) and pollution day to educate Airport staff on FOD and challenge staff to pick up all airside and landside pollution.	Environment Operational
8	Purchase only "environmentally friendly" cleaning products for janitorial staff.	Environment Social
9	Install motion-detection lights in commonly unused rooms to prevent unused lighting.	Environment Economic
10	Install hand-drying systems in restrooms to remove paper towels.	Environment Economic Social
11	Develop a waste reduction/recycling plan.	Environment Social

NOTES:

EONS – **E**conomic prosperity, **O**perational efficiency, **N**atural resource conservation, and **S**ocial responsibility
SOURCE: Sustainable Aviation Guidance Alliance, http://airportsustainability.org/sustainable-practices (accessed December 18, 2017).

Many of the proposed initiatives will require employee education to ensure success. Accordingly, it is anticipated that the Airport sustainability champion will host mandatory staff meetings to educate Airport employees on the efforts and benefits of the sustainability initiatives.

The development of a waste reduction and recycling plan (Reference Number 10 in Table 7.3-1) will greatly benefit the Airport in the goal of reducing its environmental impact. It is also a tangible program in which quantitative data can be shared with the community. This plan, which is further described in section 7.5, outlines specific recycling and waste reduction initiatives that add to the Airports Departments' overall sustainability efforts.

7.3.2 ACTION PLAN

The success of the previously identified sustainability initiatives is primarily tied to the following three questions:

1. How will we get where we want to be?
2. Who will make it happen?
3. When will it happen?

Answering these three questions is intended to give the Airports Department a place to start in implementing its chosen initiatives. Although it is recommended that the Airports Department answer the questions to the best of its abilities, the Airports Department is not obligated to implement the initiatives using the exact answers to the questions. Circumstances often change and require airports to update their timeline or how they implement an initiative.

Table 7.3-2 presents EYW's sustainability action plan. The numbered cells displayed in the table correspond directly with the numbers of the sustainability initiatives presented in Table 7.3-1.

Table 7.3-2: EYW Sustainability Action Plan

NUMBER	HOW	WHO	TIME FRAME
1	Educate Airport staff on desired sustainability practices and post signs in the office as reminders.	Airport staff led by sustainability champion	Short term
2	Educate Airport staff on desired sustainability practices and post signs in the office as reminders.	Airport staff led by sustainability champion	Short term
3	Develop signs with third-party sign developer and place at key areas around the Airport.	Airport staff led by sustainability champion	Short term
4	Train appropriate staff members on the Airport's sustainability plan, specifically explaining the role they play and why.	Airport staff led by sustainability champion	Short term
5	Actively seek out local community events and projects and reach out to their respective managers about sponsor opportunities.	Airport managerial staff	Short term
6	Designate one day every year to gather Airport staff, to discuss FOD and pollution, and to have staff members go outside to the Airport airside and landside to collect as much FOD/pollution as possible.	Airport staff led by sustainability champion	Short term
7	Research and switch to cost-effective cleaning products deemed "environmentally friendly." Post signs around the Airport stating, "EYW is cleaned with all environmentally friendly materials."	Airport janitorial staff	Short term
8	Find and purchase motion-detection lighting equipment to install in rooms/offices that do not experience frequent usage.	Airport sustainability champion and Airport maintenance staff	Long term

9	Find and purchase air hand-drying system equipment to install in restrooms.	Airport sustainability champion and Airport maintenance staff	Long term
10	Develop a waste reduction and recycling plan.	Airport staff	Short term

SOURCE: Ricondo & Associates, Inc., December 2017

7.4 Performance Monitoring and Next Steps

As the Airports Department begins to implement the Airport's sustainability plan, it is important to revisit and monitor the plan's progress. As previously stated, sustainability planning is a continuous effort. Occasional updates to the plan will be required to ensure the plan is unfolding efficiently and within the established sustainability framework. Beginning with the development of this sustainability plan, it is the Airports Department's intention to continue sustainability efforts into the future.

7.4.1 RECURRING CHECK-IN MEETINGS

To ensure the effectiveness of this sustainability plan, it is anticipated that the Airports Department will host annual sustainability check-in meetings with the sustainability champion and Airport management team. These meetings will cover the initiatives that have been implemented, their status, and their perceived effectiveness. These meetings will serve as a general overview of initiative performance.

In addition to reviewing current initiatives, check-in meetings will discuss the feasibility and merits of implementing new initiatives. Further initiative selection will be documented appropriately to be included in future iterations of the Airport's written sustainability plan. Specifically, the annual sustainability meeting will answer the following questions:

1. Which initiatives have been implemented?
2. How effective have the implemented initiatives been?
3. Are we meeting our goals and vision?
4. What could we improve upon?
5. Are we ready to implement more initiatives?
6. Do we need to select new initiatives?

7.4.2 PERFORMANCE MONITORING

It is anticipated that the sustainability champion will regularly track the performance of the initiatives. The sustainability champion should develop a brief written update on the initiatives every three months that would cover which initiatives have been formally implemented, how the Airport staff and customers have reacted, and if the initiatives have achieved their anticipated result. This update should be developed and submitted to Airport management to track the sustainability plan's success and to determine if further efforts are required. Additionally, these updates will serve as a motivational tool to continue the pursuit of overall Airport sustainability.

7.5 Waste Reduction and Recycling Plan

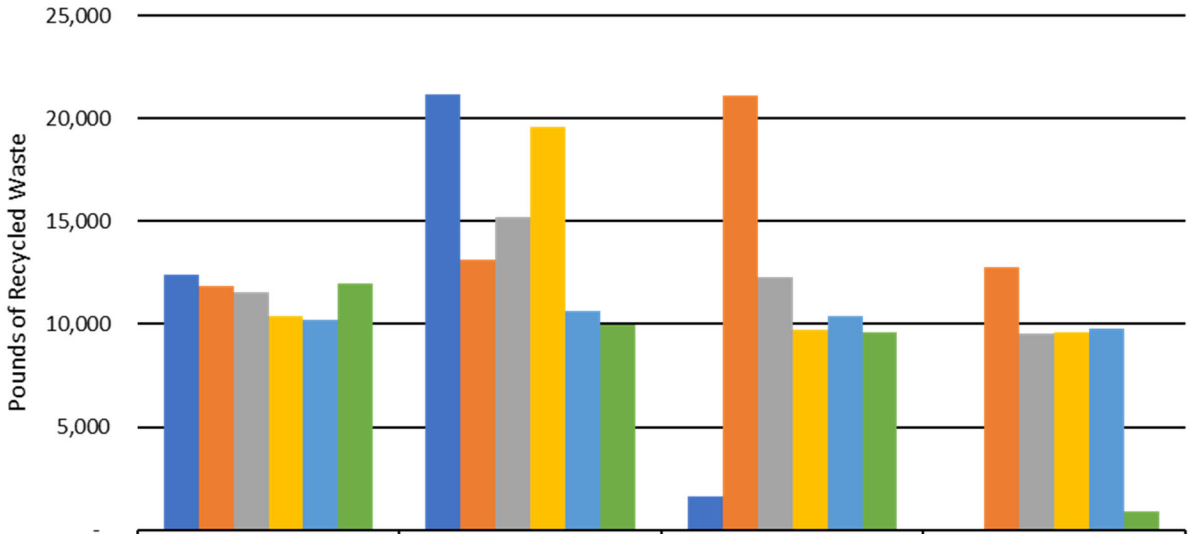
Being a top destination for tourists and travelers from all over the world, EYW maintains the responsibility of providing an efficient and safe airport, while protecting the delicate and expansive ecosystem that surrounds it. An additional responsibility for an airport commercial traffic is to pursue sustainable practices and, more specifically, recycling initiatives.

7.5.1 EXISTING RECYCLING/WASTE PROGRAM

In 2009, the City of Key West implemented a mandatory recycling practice to reduce the City's overall waste footprint.[4] EYW complies with this City requirement primarily by placing marked recycle bins next to all standard waste bins in the commercial terminal and its surrounding facilities. In fiscal year 2015, EYW recorded nearly 50,000 pounds in recycled waste which represents approximately 14% of total waste. This demonstrates the role that the Airport plays in the City of Key West's recycling efforts. **Exhibit 7.5-1** displays EYW's recorded recycled content between fiscal year 2013 and fiscal year 2017.

[4] City of Key West Florida, http://www.keywestcity.com/egov/docs/129486867240.htm (accessed November 13, 2017).

Exhibit 7.5-1: Pounds of Annual Recycled Waste



	Winter	Spring	Summer	Fall
2012	12,380	21,160	1,658	Data not Available
2013	11,860	13,120	21,100	12,740
2014	11,580	15,180	12,260	9,560
2015	10,380	19,560	9,700	9,580
2016	10,220	10,660	10,400	9,800
2017	11,980	9,940	9,580	900 1/

NOTES: 1/ Low recycling rate due to clearing of hurricane debris.

SOURCE: Monroe County Airports Department, April 28, 2018.
PREPARED BY: Ricondo & Associates, Inc., May 2018.

Most of the Airport's recycling efforts, beyond the stationed recycling bins, are coordinated by the Airport's TSA staff. However, EYW currently does not have a formal recycling or waste management plan in place; despite this, Airports Department staff understand the significance and importance of a successful waste/recycling program.

7.5.1.1 Areas of Influence

Since the commercial passenger terminal is where the majority of passenger activity takes place at the Airport, this area remains the primary focus of waste management and recycling efforts. However, the recycled waste compactor has been placed in a neutral location at the Airport to allow for easy access by the Airport FBO and Airport tenants. This location provides other Airport users the opportunity to participate in the Airport's recycling efforts. While the Airport shares compactors and dumpsters with the FBO and tenants, waste reduction and recycling efforts are not currently coordinated directly with them.

The Airports Department recognizes three primary categorizations of waste: Municipal Solid Waste (MSW), Recyclables, and Construction and Demolition (C&D) Debris. Each of these waste categories has a designated compactor located to the west of the commercial passenger terminal. The three primary waste categorizations are further explained as follows:

- **Municipal Solid Waste** – This waste is regarded as standard waste produced by people on a daily basis. At EYW, this waste includes deplaned waste and compostables. The janitorial staff at EYW collects this waste daily, and transports it to the MSW compactor.
- **Recyclables** – Generally, recyclables are a form of MSW that can be repurposed in post-processing efforts. In accordance with the City of Key West, at EYW, recycling bins are placed next to each standard MSW bin. These recycling bins collect glass, aluminum, cardboard, paper, and plastics marked with #1 through #7. Accepted recycled materials are determined by Waste Management, Inc. (WM), the waste collection agency at the Airport. The EYW janitorial staff collects recycled waste daily and transports it to the designated recycled waste compactor.
- **Construction and Demolition Debris** – This form of MSW is generated through any Airport construction effort, including demolition, renovation, utility maintenance, etc. FAA guidance on Airport Recycling, Reuse, and Waste Reduction Plans[5] lists the following examples of C&D debris: concrete, wood, metals, soil, bricks and masonry, asphalt, rock, stone, gravel, sand, carpet, and pipe. The transportation of C&D debris at EYW takes place on an as-needed basis and is generally performed by the responsible construction or renovation team.

The three categories contribute collectively to the Airport's waste footprint. However, the goal of this plan is to focus more intently on decreasing typical landfill-bound MSW generation and increasing Airport recyclables.

7.5.1.2 Existing Waste Operations

The waste process begins at EYW when waste is collected daily by the Airport janitorial staff. This waste is then taken to the Airport compactors located to the west of the commercial terminals. WM then takes the waste to the City of Key West Solid Waste Transfer Station (Transfer Station), which is owned and operated by the City. According to the City's Solid Waste Master Plan,[6] the Transfer Station is permitted to handle up to 350 tons of waste a day. The waste tipping fee at the Transfer Station is $165.97 per ton, while there is no tipping fee for recyclables. In 2010 and 2011, a waste study was conducted at the Transfer Station to determine the amount of waste that could have been recycled. The study found that, collectively, 71 percent of waste at the Transfer Station could have been recycled. After waste is collected at the Transfer Station, WM transports it to one of its waste-to-energy facilities in Broward County, Florida, or to one of its landfills.

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5 Federal Aviation Administration, https://www.faa.gov/airports/environmental/media/airport-recycling-reuse-waste-reduction-plans-guidance.pdf (accessed December 18, 2017).

6 City of Key West Florida, http://www.cityofkeywest-fl.gov/egov/documents/1345470842_715881.pdf (December 18, 2017).

7.5.2 RECYCLING FEASIBILITY

In pursuing additional recycling initiatives at EYW, it is important to first examine the feasibility of recycling efforts at the Airport. This section analyzes both the physical and economic feasibility of a recycling program at EYW, as well as federal, state, and local guidance for implementation.

7.5.2.1 Physical Feasibility

EYW covers approximately 334 acres of land in Key West, Florida. In 2009, major renovations were completed to EYW's commercial terminal, adding a new elevated building and new parking spaces for 300 vehicles. This new 30,000-square-foot terminal building nearly doubled the commercial terminal building size, increasing the Airport's capacity for commercial air travelers. With the addition of terminal space and parking facilities, EYW increased its amount of single-stream recycling bins. Currently, EYW only uses single-stream recycling bins located around the commercial terminal and its associated facilities. These bins are easily accessible to janitorial staff and are clearly marked in visible areas. **Exhibit 7.5-2** displays a single-stream recycling bin at EYW.

To increase waste-handling efficiency, EYW has its recycling and waste compactors located adjacent to each other in an easily accessible area. The adjacent location of these compactors allows for an efficient and streamlined handling process of the waste from the terminal and corresponding facilities, where it is collected, to the compactors, where it is disposed. Further, this location provides adequate space for WM to efficiently collect disposed waste. Despite its relatively small size, EYW has successfully maintained the single-stream recycling collection and disposal practice. As new or expanded facilities open at the airport, the ongoing waste collection process and recycling initiatives are expected to cover the newly developed areas and/or facilities.

Exhibit 7.5-2: Single-Stream Recycling Bin at EYW



SOURCE: Monroe County Airports Department, April 28 2018.
PREPARED BY: Ricondo & Associates, Inc., May 2018.

7.5.2.2 Government Guidance

Federal, state, and local guidance exists to mandate, encourage, and assist efforts being undertaken by entities in the United States, the State of Florida, and the City of Key West.

Federal Guidance

There are numerous resources provided by the federal government to aid airport operators and other entities in pursuing recycling and waste management efforts. The FAA provides information and guidance to airport operators for successfully implementing sustainable practices, such as recycling at airports. Specifically, the FAA provides technical guidance on Airport Recycling, Reuse, and Waste Reduction through the form of a technical memorandum, a synthesis document, and collections of ACRP reports[7]. Additionally, in 2009, the EPA completed a large collection of airport-specific recycling information through numerous research studies and data collection efforts: "Developing and Implementing an Airport Recycling Program."[8] The FAA collaborates with the EPA to ensure airports are receiving the best and most accurate information for implementing recycling and waste reduction initiatives.

State Guidance

The State of Florida has several laws and initiatives in place to ensure proper waste handling, disposal, and recycling. The Florida Department of Environmental Protection (FDEP) is specifically responsible for maintaining the state's rules and statutes regarding recycling. Florida Statute (F.S.) Chapter 403, Section 7032, "Recycling,"[9] sets Florida's long-term recycling goal of 75 percent of municipal solid waste by 2020. Further, F.S. Chapter 403, Section 706, "Local Government Solid Waste Responsibilities,"[10] outlines required recycled waste goals for the state's counties: 70 percent by December 31, 2018, and 75 percent by December 31, 2020.

In addition to the Florida Statutes and guidance from FDEP, the FDOT provides airport-specific information on pursuing sustainability initiatives. The FDOT *Airport Sustainability Guidebook* was released in 2017. This guidebook provides Florida's airports with specific processes and objectives to achieve successful sustainability initiatives.

The Airports Department recognizes the rules and goals enforced by the FDEP and is striving to provide a solid foundation for Monroe County to achieve its upcoming recycling goals of 70 percent by the end of 2018 and 75 percent by the end of 2020. Further, the Airports Department strongly anticipates upcoming guidance from the FDOT to aid in the implementation of sustainable initiatives at the Airport.

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[7] https://www.faa.gov/airports/environmental/airport_recycling/

[8] United States Environmental Protection Agency, https://archive.epa.gov/wastes/conserve/tools/rogo/web/pdf/airport-recycling-guide.pdf (accessed December 18, 2017).

[9] The Florida State Senate, 2013 Florida Statutes, http://www.flsenate.gov/Laws/Statutes/2013/403.7032 (accessed December 18, 2017).

[10] The Florida State Senate, 2013 Florida Statutes, http://www.flsenate.gov/Laws/Statutes/2013/403.706 (accessed December 18, 2017).

Local Guidance

In 2012, the City of Key West completed its *Solid Waste Master Plan: Establishing a Pathway to Zero Waste*.[11] This master plan addresses all aspects of the City's waste lifecycle, including initial disposal, waste collection, waste transportation, and corresponding fees. This master plan can be used by businesses and residents in the City of Key West to align their waste reduction and recycling goals with the City's goals and, in-turn, with the County's goals and the State's goals. Additionally, this master plan provides the City's residents and businesses with general guidance on how to effectively reduce nonrecycled waste in a variety of scenarios.

7.5.3 PLAN TO INCREASE RECYCLED WASTE

Currently at EYW, recycling bins are placed throughout the landside facilities, and the Airport houses a recycled waste compactor. While these initiatives play a large role in meeting recycling goals, further efforts will greatly help to emphasize the importance of recycling and waste reduction at the Airport.

Based on the current condition of the Airport's recycling and waste reduction plan, as well as federal, state, and local guidance, the following objectives are recommended for EYW in pursuit of increasing recycling and minimizing solid waste.

7.5.3.1 Short-Term Objectives

1. Designate an Airport recycling coordinator and associated "green team."

To ensure the success of the Airport recycling efforts, it is critical that the Airports Department designate a recycling coordinator. This staff member will be responsible for coordinating Airport recycling initiatives, maintaining staff and customer awareness, and the overall monitoring of recycling. Additionally, an Airport "green team" can be designated. This team should consist of one team member from every department of the Airport. This team will meet with the recycling coordinator and help carry out and encourage recycling tasks and initiatives within their respective Airport departments.

1. Develop and place posters in commercial terminal facilities.

Educating passengers is perhaps the most important aspect of a strong recycling program. Developing posters that encourage passengers to find their nearest recycling bin will help to increase waste recycled and to decrease standard waste. It is recommended that these posters be placed near recycling bins and/or standard waste bins to inform passengers of why recycling is important and to list the benefits that are associated with it.

2. Initiate bimonthly employee education and encouragement for recycling.

Bimonthly employee education will give Airport employees a chance to meet about recycling and to learn about their specific roles within the Airport recycling efforts. Although for most people this role may be small, the

[11] United States Environmental Protection Agency, City of Key West Florida, http://www.cityofkeywest-fl.gov/egov/documents/1345470842_715881.pdf (accessed December 18, 2017).

encouragement and educational impact of learning the benefits of the recycling program can help drive the success of the overall recycling efforts.

3. Implement different colored liners for recycling bins.

The EPA found that at Seattle-Tacoma International Airport, when recycling bins were more noticeable, public recycling at the airport increased by 40 percent.[12] While EYW's recycling bins easily stand out, the EPA also recommends the use of different colored liners for recycling bins. This effort will help attract the public's eye, and it will also reduce the risk of confusion for the janitorial staff between recycled waste and nonrecycled waste during the disposal process.

7.5.3.2 Long-Term Objectives

1. Relabel recycling bins with example images of recycleable waste.

The uncertainty of which items to place in a recycling bin often leads to customers either putting inappropriate waste in recycling bins or bypassing the recycling bin altogether. For this reason, many studies show that top-facing images representing the types of waste to put in a recycling bin will increase the amount of appropriate recycled waste. An EPA study found that the most common types of recycled waste generated by airport public terminals, ticketing areas, and security gates included: mixed paper, newspaper, glass, aluminum cans, and plastic bottles. Therefore, it is recommended that recycle bins at EYW depict representations of these types of waste.

2. Coordinate with airline representatives to reduce solid deplaned waste.

In the FAA's 2013 recycling synthesis,[13] a study showed that "on average, 20 percent of a commercial service airport's municipal solid waste is from deplaned waste." Further FAA analysis has shown that "40 percent of that total could be readily recycled." To help reduce the amount of nonrecycled deplaned waste generated by commercial airlines at EYW, it is recommended that the airport leadership reach out to airline representatives to coordinate alternative methods of handling waste and properly discarding it to the appropriate recycling bins.

3. Establish a tracking system for solid waste and recycled waste.

To help track and understand the Airport's waste footprint, it is recommended that the Airports Department establish a simple qualitative and quantitative methodology to track the waste generated at the Airport. Due to the availability of waste compactors, the Airports Department should begin to track the amount of waste and compare that to the amount of recycled waste on a weekly and monthly basis. Additionally, Airport staff should track which Airport facilities are receiving the most recycled waste and nonrecycled waste. These forms of waste

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12 United States Environmental Protection Agency, https://archive.epa.gov/wastes/conserve/tools/rogo/web/pdf/airport-recycling-guide.pdf (accessed December 18, 2017).

13 Federal Aviation Administration, https://www.faa.gov/airports/resources/publications/reports/environmental/media/RecyclingSynthesis2013.pdf (accessed December 18, 2017).

tracking and identification can greatly benefit the Airports Department in its future efforts to reduce waste and to encourage recycling at the Airport.

7.5.3.3 Continuous Monitoring – Continuous Improvement

The Airports Department recognizes the vital role of the Airport in the City, County, and State recycling efforts. Further, the Airports Department is continuously seeking to protect and promote the safety of the ecosystems that surround EYW. Therefore, it is important to the Airports Department to continuously monitor its recycling and waste reduction efforts, to educate its staff and customers on the importance of recycling and waste reduction, and to seek ongoing improvements and methods that will further accelerate the Airport's recycling.

Chapter 8

Implementation Plan

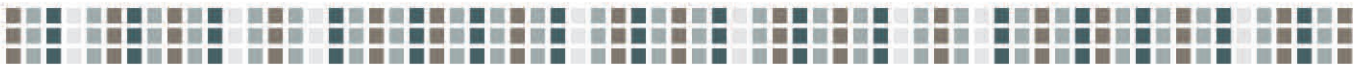


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8. Implementation Plan

8.1 Introduction

The primary objective of this Implementation Plan is to outline the capital improvements proposed for the Airport through 2035. The implementation plan presented herein describes the timing of proposed improvements, prerequisite projects, and anticipated development costs. This implementation plan is intended to provide general financial guidance for the Monroe County Department of Airports and Airport staff to support decision making relative to recommended development at the Airport based on forecast demand and operational needs.

The projects described in this section focus on those identified as part of the master planning process (master plan projects). Projects currently listed on the existing Capital Improvement Program (CIP) and not discussed in detail in the MPU (non-master plan projects) have also been incorporated into this section. It should be noted that the CIP is based on the assumption that the Airport's activity will grow consistent with the aviation activity forecasts presented in this Master Plan, and that the facilities will be developed when required to meet demand. If actual activity does not meet forecast demand, the implementation of the project schedule should be modified as necessary.

The information provided in this document can also be used to update the Joint Automated Capital Improvement Program (JACIP) used by the FAA and the FDOT to coordinate and program airport grant funding. To facilitate coordination with the various stakeholders, project summary sheets for each master plan project have been included. These summary sheets include the following information:

- name and brief description of the project
- project justification: brief explanation on why the project is needed
- site information: location map indicating the project location and overall project exhibit
- projected timing: anticipated project construction start date
- order-of-magnitude costs
- sources of funds: potential sources of funding for the projects

8.2 Capital Improvement Program

The proposed CIP for the Airport includes airfield, landside, hangar, and other general airport improvements necessary to accommodate forecast aviation activity as well as existing or anticipated airport needs, and to address the County's development goals for the Airport. This section presents a general order of priority for the implementation of these improvements based on forecast airport activity growth.

8.2.1 PROJECT SEQUENCING

To clearly present the priorities for the recommended Airport improvements, the proposed sequencing of projects has been divided into three phases:

- Short-Term Improvements (FY 2018 through FY 2023)
- Intermediate-Term Improvements (FY 2024 through FY 2029)
- Long-Term Improvements (FY 2030 through FY 2035)

Although these three phases estimate the general period (in Fiscal Years) for future Airport improvements, periodic re-evaluation of the proposed timing will be necessary to accommodate changing development needs or priorities and to adjust for unforeseen factors. It is also possible that other improvements not identified in this implementation plan may be required to support airport operations and/or improve operational efficiency.

The short-term CIP projects are listed in **Table 8-1** and illustrated on **Exhibit 8-1.** Projects identified as part of the MPU are described below:

- Taxiway A Rehabilitation, Geometry Improvements, and Lighting (depicted as project TW2): In 2015, the average Pavement Condition Index (PCI) for Taxiway A was 65[1]. The age of the pavement combined with the increased traffic and aircraft size has resulted in the pavement showing signs of distress and a potential generator of Foreign Object Debris (FOD) on the taxiways. The rehabilitation of the pavement will include a mill and overlay. Improvements to the pavement geometry along Taxiway A are needed to comply with FAA design standards. Geometry improvements include widening the Taxiway A connectors to allow for cockpit-over-centerline taxiing; removing excess pavement at both the Runway 9 and Runway 27 entrances from Taxiway A; and installing a no-taxi island south of Taxiway C to prevent direct access from the apron to the runway. Rehabilitation of the taxiway lighting system includes the replacement of taxiway edge light fixtures, isolation transformers, and circuitry back to the airfield lighting vault.

[1] Florida Department of Transportation, *Statewide Airfield Pavement Management Program*, June 2015.

Table 8-1: Short-Term Projects

Project ID[1]	Project Description
Master Plan Projects	
AP 1	Commercial Apron Expansion - Design and Permitting
AP 2	Commercial Apron Expansion - Construction
AP 3	Overflow Parking Ramp (Phase 1)
AP 4	Vehicle Service Road Relocation
ED 1	Environmental Assessment - Taxiway A, Commercial Apron Extension, Overflow Aircraft Parking, and Vehicle Service Road Relocation
LS 1	Terminal Arrivals Curb Modifications
LS 2	New Access Road
LS 3	Bus Station Relocation
LS 4	Rental Car Facilities (Phase 1)
PS 3	Terminal Expansion and Renovation – Preliminary Design
SF 1 & 2	Maintenance Building - Design and Construction
SF 3	Consolidated Maintenance Building - Construction
TE 6	Terminal Expansion and Renovation - Design
TE 7	Terminal Expansion and Renovation - Construction (Phase 1)
TW 1	Taxiway A Rehabilitation, Geometry Improvements, and Lighting - Design
TW 2	Taxiway A Rehabilitation, Geometry Improvements, and Lighting - Construction
TW 3	Former NWS Weather Balloon Facility Demolition
TW 4	Taxiway A Extension – Design, Permitting, and Construction
FE 1	New Perimeter Fence
Non-Master Plan Projects	
TE 1	Terminal Improvements - Chillers
TE 2	Terminal Restrooms and Pet Relief Design
TE 3	Customs Expansion
TE 4	Terminal Annex Modifications II & III/ Customs Upgrades (including EOC)
TE 5	Restroom Renovation and SARA
SI 1-6	Airport Building and Security Improvements
EQ 2,3,4,6	Essential Airport Equipment
EQ 1	Replace Existing Airport Beacon
EQ 5	Airfield Rescue and Fire Fighting (ARFF) Equipment and Fire Support Equipment
NP 1 - 6	Noise Insulation Program - Phase 1 - 6

NOTES:

1/ LS – Landside; TE – Terminal; TW – Taxiway; NP – Noise Insulation Program; SI – Security Improvements; PS – Planning Study; EQ – Equipment; ED – Environmental Documentation; AP – Apron; AF – Airfield; GA – General Aviation; EOC – Emergency Operations Center; SF – Support Facility

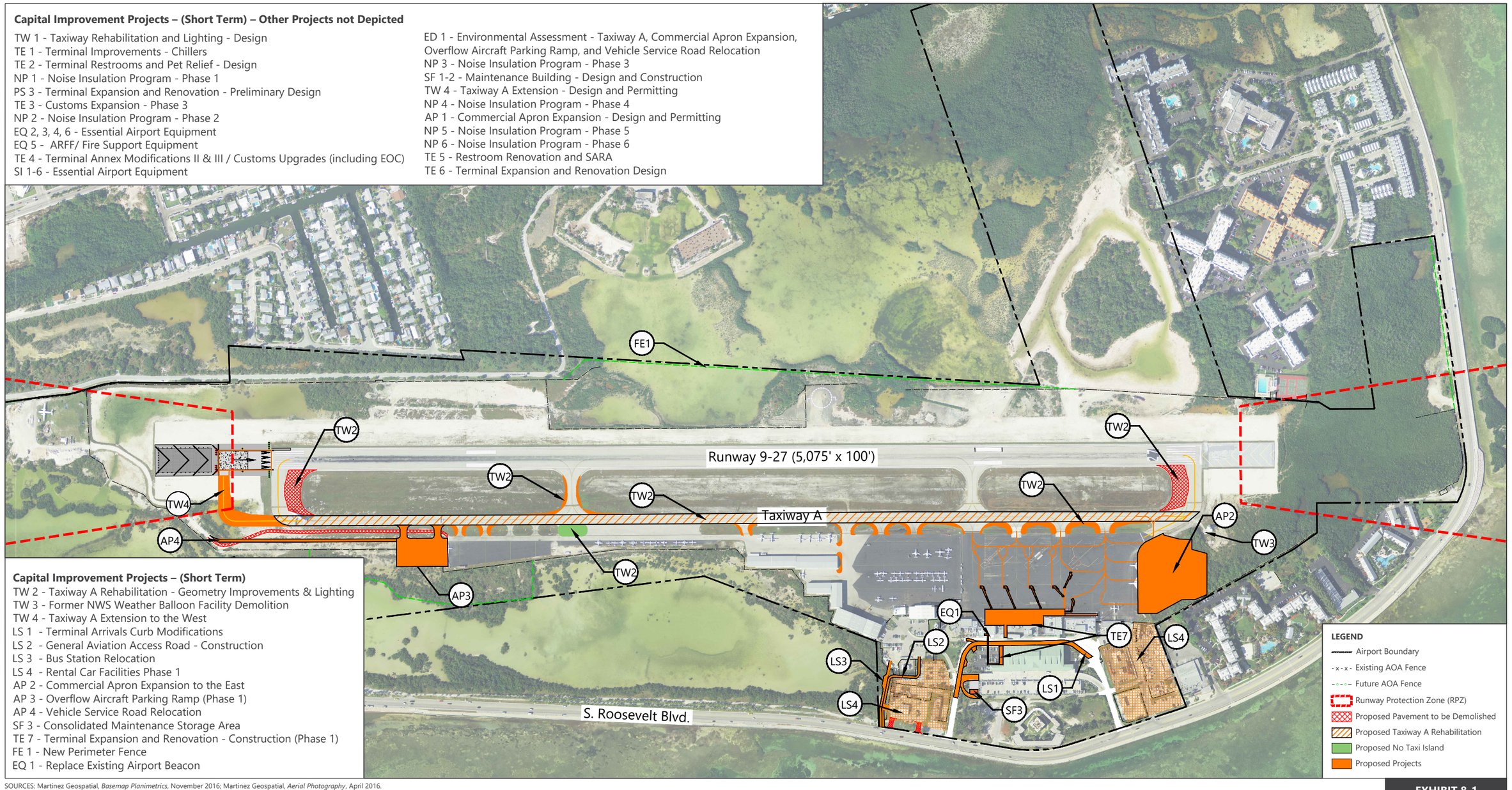
2/ FY = October 1 through September 30. Programmed FY is based on the approved Master Plan Forecasts. Actual implementation and timeline should be correlated with actual demand levels.

SOURCES: Monroe County, December 2018 (Capital Improvement Program); Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., January 2019.

Capital Improvement Projects – (Short Term) – Other Projects not Depicted

TW 1 - Taxiway Rehabilitation and Lighting - Design
TE 1 - Terminal Improvements - Chillers
TE 2 - Terminal Restrooms and Pet Relief - Design
NP 1 - Noise Insulation Program - Phase 1
PS 3 - Terminal Expansion and Renovation - Preliminary Design
TE 3 - Customs Expansion - Phase 3
NP 2 - Noise Insulation Program - Phase 2
EQ 2, 3, 4, 6 - Essential Airport Equipment
EQ 5 - ARFF/ Fire Support Equipment
TE 4 - Terminal Annex Modifications II & III / Customs Upgrades (including EOC)
SI 1-6 - Essential Airport Equipment
ED 1 - Environmental Assessment - Taxiway A, Commercial Apron Expansion, Overflow Aircraft Parking Ramp, and Vehicle Service Road Relocation
NP 3 - Noise Insulation Program - Phase 3
SF 1-2 - Maintenance Building - Design and Construction
TW 4 - Taxiway A Extension - Design and Permitting
NP 4 - Noise Insulation Program - Phase 4
AP 1 - Commercial Apron Expansion - Design and Permitting
NP 5 - Noise Insulation Program - Phase 5
NP 6 - Noise Insulation Program - Phase 6
TE 5 - Restroom Renovation and SARA
TE 6 - Terminal Expansion and Renovation Design



Capital Improvement Projects – (Short Term)

TW 2 - Taxiway A Rehabilitation - Geometry Improvements & Lighting
TW 3 - Former NWS Weather Balloon Facility Demolition
TW 4 - Taxiway A Extension to the West
LS 1 - Terminal Arrivals Curb Modifications
LS 2 - General Aviation Access Road - Construction
LS 3 - Bus Station Relocation
LS 4 - Rental Car Facilities Phase 1
AP 2 - Commercial Apron Expansion to the East
AP 3 - Overflow Aircraft Parking Ramp (Phase 1)
AP 4 - Vehicle Service Road Relocation
SF 3 - Consolidated Maintenance Storage Area
TE 7 - Terminal Expansion and Renovation - Construction (Phase 1)
FE 1 - New Perimeter Fence
EQ 1 - Replace Existing Airport Beacon

SOURCES: Martinez Geospatial, *Basemap Planimetrics*, November 2016; Martinez Geospatial, *Aerial Photography*, April 2016.
PREPARED BY: Ricondo & Associates, Inc., January, 2019.

EXHIBIT 8-1

NORTH 0 500 ft.

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Short-Term Improvement Projects (FY 2018 – FY 2023)

- Taxiway A Extension (depicted as project TW4): Taxiway A will be extended to the west to provide access to the runway end. A full-length parallel taxiway will provide additional takeoff runway length without back taxiing on the runway.
- Terminal Arrivals Curb Modifications (depicted as project LS1): This project consists of improvements to Faraldo Circle to maintain two lanes through the terminal core and eliminate the existing merge lane., This project also includes modifications of curbsides and landscaping, as well as 1,334 SY of pavement construction and restriping.
- Terminal Expansion and Renovation – Project Definition Document (noted as project PS3): This project includes a project definition document (PDD) to further define the project scope and operational parameters for the proposed terminal expansion and renovation.
- Terminal Expansion and Renovation (depicted as project TE7): A second-floor concourse to the north of the existing terminal facility will be built. This concourse will accommodate new holdrooms, concession spaces, restrooms, and five boarding bridges, and will connect the existing landside terminal and proposed building via the existing departure bridge. The existing terminal will be improved and renovated to meet forecast demand with the addition of a new baggage claim, an expanded baggage makeup area, and the creation of a turboprop holdroom.
- General Aviation (GA) Area Access Road (depicted as project LS2): This project consists of the construction of a new access roadway to the GA area and Airport support facilities directly from S. Roosevelt Boulevard. In addition, this project will eliminate two existing access points on S. Roosevelt Boulevard and will provide dedicated access to the existing Department of Motor Vehicles (DMV) from the newly constructed roadway. This project would eliminate trips on the arrival curbside roadway generated by fuel tankers and county waste management trucks, improving safety and security at the Airport.
- Bus Station Relocation (depicted as project LS3): This project involves relocating the bus pickup/drop-off currently leased to Greyhound and associated office at the Airport.
- Commercial Apron Expansion (depicted as project AP2): Expanding the commercial terminal apron is necessary to accommodate additional aircraft during peak periods and during irregular operations. The proposed expanded terminal apron will allow for aircraft utilizing the existing easternmost apron parking positions and aircraft utilizing the future designated Customs and Border Protection (CBP) parking area to power-in and power-out, rather than utilize an aircraft tug. The commercial apron expansion will also provide additional capacity during the expansion of the terminal.
- Consolidated Maintenance Building (depicted as project SF3): This project includes the consolidation of all Airport maintenance facilities into one building, which will be constructed as an extension to the west side of the existing employee parking garage. This site will be built above the stormwater retention area to avoid impacts to the retention area.
- Former NWS Balloon Facility Demolition (depicted as project TW3): This project includes the demolition of the former NWS Balloon facility which is currently located within the Runway 9-27 Runway Object Free Area (ROFA).
- New Perimeter Fence (depicted as project FE1): The project includes the construction of a new air operations area (AOA) fence along the north Airport boundary (including earthwork and infill of the salt ponds and

wetland areas). This project would also include the removal of the existing fence located within the Runway Safety Area (RSA), as well as environmental reviews and approvals.

- Overflow Aircraft Parking Ramp – Phase 1 (depicted as project AP3): This project consists of the construction of approximately 5,000 square yards of ramp to provide additional aircraft parking positions. This ramp will be used to park aircraft that cannot be accommodated on the existing apron areas.
- Rental Car Facilities – Phase 1 (depicted as project LS4): This project includes the planning, design, and construction of a consolidated rental car (CONRAC) facility. The location of and concession program for the proposed facilities will be defined as part of the planning phase for this new CONRAC facility.
- Vehicle Service Road Relocation (depicted as project AP4): This project provides for the relocation of the service road located south of Taxiway A and west of the existing GA ramp. Specifically, the service road will be relocated outside of the runway and taxiway object free areas in compliance with FAA airport design standards, as stipulated in Advisory Circular 150/5300-13A.
- Replace Existing Airport Beacon (depicted as project EQ2): This project includes the replacement of the existing airfield's rotating beacon, pole, and foundation. The existing beacon has reached the end of its serviceable life and it is not easily maintained. The existing beacon will be replaced with a beacon and pole system to allow for maintenance to occur without the need for the Airport to rent a boom truck.
- Environmental Documentation (project ED1): An environmental document will be necessary to study the implications of these projects. In particular, an Environmental Assessment (EA) will be required for the Taxiway A Extension, the Commercial Apron Expansion Project, the Overflow Aircraft Parking Ramp project, and the Vehicle Service Road Relocation project.

The intermediate-term CIP projects are required to provide additional public parking and a terminal expansion and renovation. A list of proposed projects occurring during the intermediate-term is included in **Table 8-2.** The intermediate-term projects are illustrated on **Exhibit 8-2** and are described below.

- Public Parking Facilities (Phase 1) (depicted as project LS5): This project consists of the planning, design, and construction of a new public parking lot and/or garage with approximately 150 parking spaces. The location of the proposed public parking facilities will be established once the location of the CONRAC facilities is set.
- Terminal Expansion and Renovation – Phase 2 and 3 (depicted as projects TE8 and TE9): The second and third phase of the terminal expansion and renovation project. The terminal expansion will involve a new second-floor concourse north of the existing terminal facility. The existing terminal will also be improved and renovated to accommodate anticipated forecasted demand.
- Security Screening Checkpoint Expansion (depicted as project LS 6): This project proposes the construction of an 1,800-square-foot building extension to the west of the existing security checkpoint to contain the third checkpoint lane that is required to accommodate the projected passenger demand. This third lane will be capable of functioning either as a dedicated Pre✓ lane or a standard lane.
- Airport Master Plan Update (project PS8): This project will update the Airport Master Plan to provide the framework needed to cost effectively satisfy aviation demand, while considering potential environmental and socioeconomic impacts. Airport Master Plans are also useful for reassessing airport needs and changing patterns at the Airport.

Table 8-2: Intermediate-Term Projects

Project ID[1]	Project Description
Master Plan Projects	
ED 2	Environmental Documentation – Intermediate-term projects
LS 5	Public Parking Facilities – Design and Construction
LS 6	Security Screening Checkpoint Expansion
PS 8	Airport Master Plan Update
TE 8	Terminal Expansion and Renovation - Construction (Phase 2)
TE 9	Terminal Expansion and Renovation - Construction (Phase 3)
ED 3	Environmental Assessment – Overflow Aircraft Parking Ramp (Phase 2)
AP 5	Overflow Aircraft Parking Ramp Expansion (Phase 2) - Design
Non-Master Plan Projects	
NP 7	NIP Phase 7 Construction - Homes, Grace Lutheran Church and School (Phase 1)
NP 8	NIP Phase 7 Construction - Homes, Grace Lutheran Church and School (Phase 2)

NOTES:

1/ LS – Landside; TE – Terminal; NP – Noise Insulation Program; PS – Planning Study; ED – Environmental Documentation; AP – Apron; GA – General Aviation; EOC – Emergency Operations Center; CATEX – Categorical Exclusion

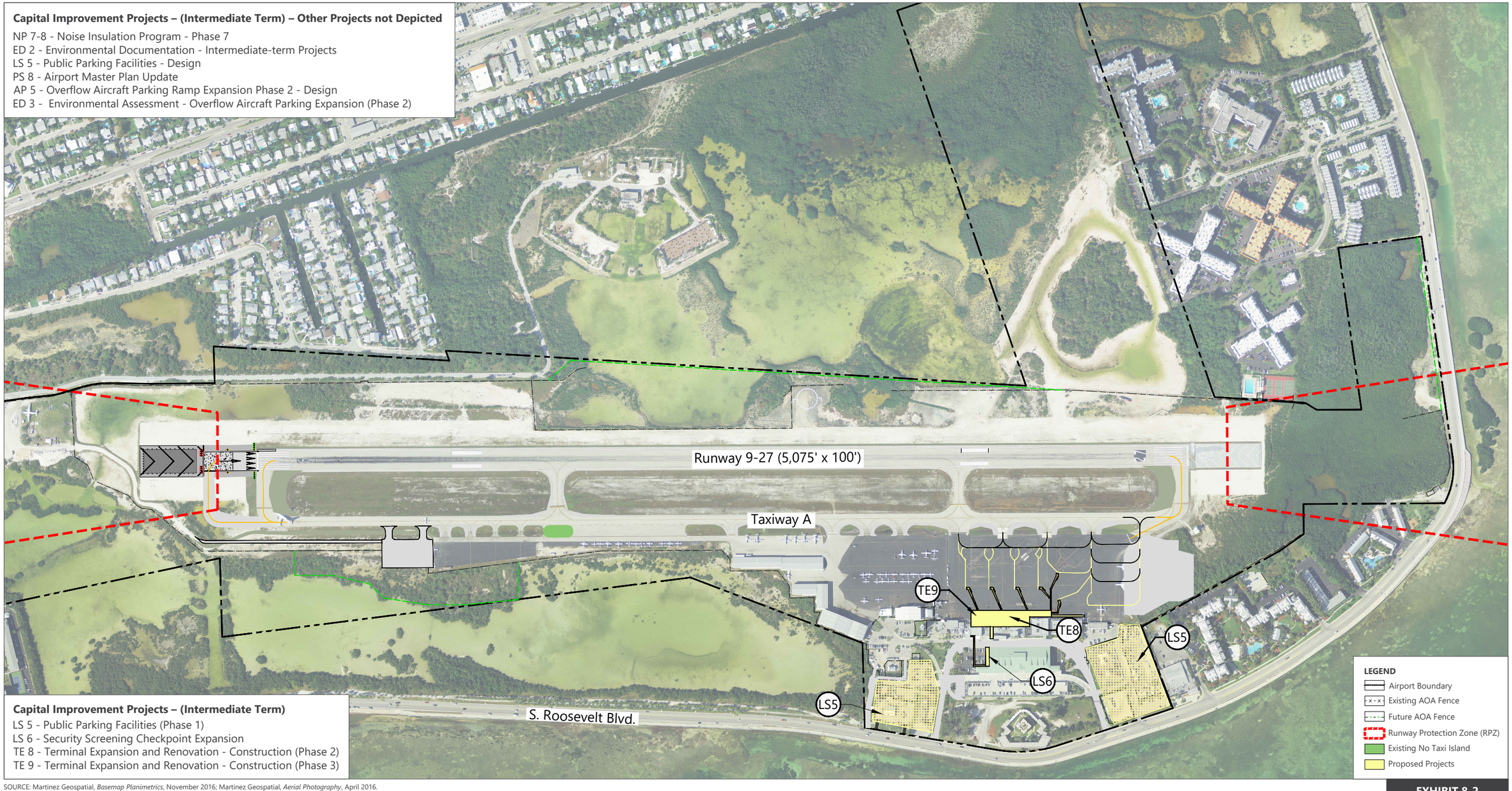
2/ FY = October 1 through September 30. Programmed FY is based on the approved Master Plan Forecasts. Actual implementation and timeline should be correlated with actual demand levels.

SOURCES: Monroe County, December 2018 (Capital Improvement Program); Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., January 2019.

Capital Improvement Projects – (Intermediate Term) – Other Projects not Depicted

NP 7-8 - Noise Insulation Program - Phase 7
ED 2 - Environmental Documentation - Intermediate-term Projects
LS 5 - Public Parking Facilities - Design
PS 8 - Airport Master Plan Update
AP 5 - Overflow Aircraft Parking Ramp Expansion Phase 2 - Design
ED 3 - Environmental Assessment - Overflow Aircraft Parking Expansion (Phase 2)



Capital Improvement Projects – (Intermediate Term)

LS 5 - Public Parking Facilities (Phase 1)
LS 6 - Security Screening Checkpoint Expansion
TE 8 - Terminal Expansion and Renovation - Construction (Phase 2)
TE 9 - Terminal Expansion and Renovation - Construction (Phase 3)

SOURCE: Martinez Geospatial, *Basemap Planimetrics*, November 2016; Martinez Geospatial, *Aerial Photography*, April 2016.
PREPARED BY: Ricondo & Associates, Inc., January, 2019.

EXHIBIT 8-2

NORTH 0 500 ft.

Intermediate-Term Improvement Projects (FY 2024 – FY 2029)

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The long-term CIP projects consist of apron expansion to accommodate demand for additional aircraft parking space, the relocation of Taxiway D, and the Runway 27 bypass taxiway and safety improvements. A list of proposed projects occurring during the long-term is included in **Table 8-3.** The long-term projects are illustrated on **Exhibit 8-3** and are described below.

- Overflow Aircraft Parking Ramp Expansion (Phase 2) (depicted as project AP5): This project consists of an additional 24,000 square yards of parking apron and up to three additional connectors to Taxiway A. This new apron area constructed to FAA design standards, including access, shoulders, signage, marking, and lighting, will be required to park, fuel, and tie-down transient and based aircraft.
- Taxiway D Relocation (depicted as project AP6): This project provides for the relocation of Taxiway D 150 feet west to mitigate the direct access from the apron to the runway (in compliance with FAA AC 150/5300-13A).
- Runway 27 Bypass Taxiway and Safety Improvements (depicted as project AP7): The extension of the runway by 200 feet to the east would allow for the construction of a bypass taxiway to help mitigate potential delay at the Runway 27 end. This project also includes the construction of an Engineered Material Arresting System (EMAS) to provide a level of safety that is generally equivalent to a full RSA built to the dimensional standards in AC 150/5300-13A, *Airport Design*.

Table 8-3: Long-Term Projects

Project ID[1]	Project Description
Master Plan Projects	
AP 5	Overflow Aircraft Parking Ramp Expansion (Phase 2) - Construction
AP 6	Taxiway D Relocation
AP 7	Runway 27 Bypass Taxiway and Safety Improvements

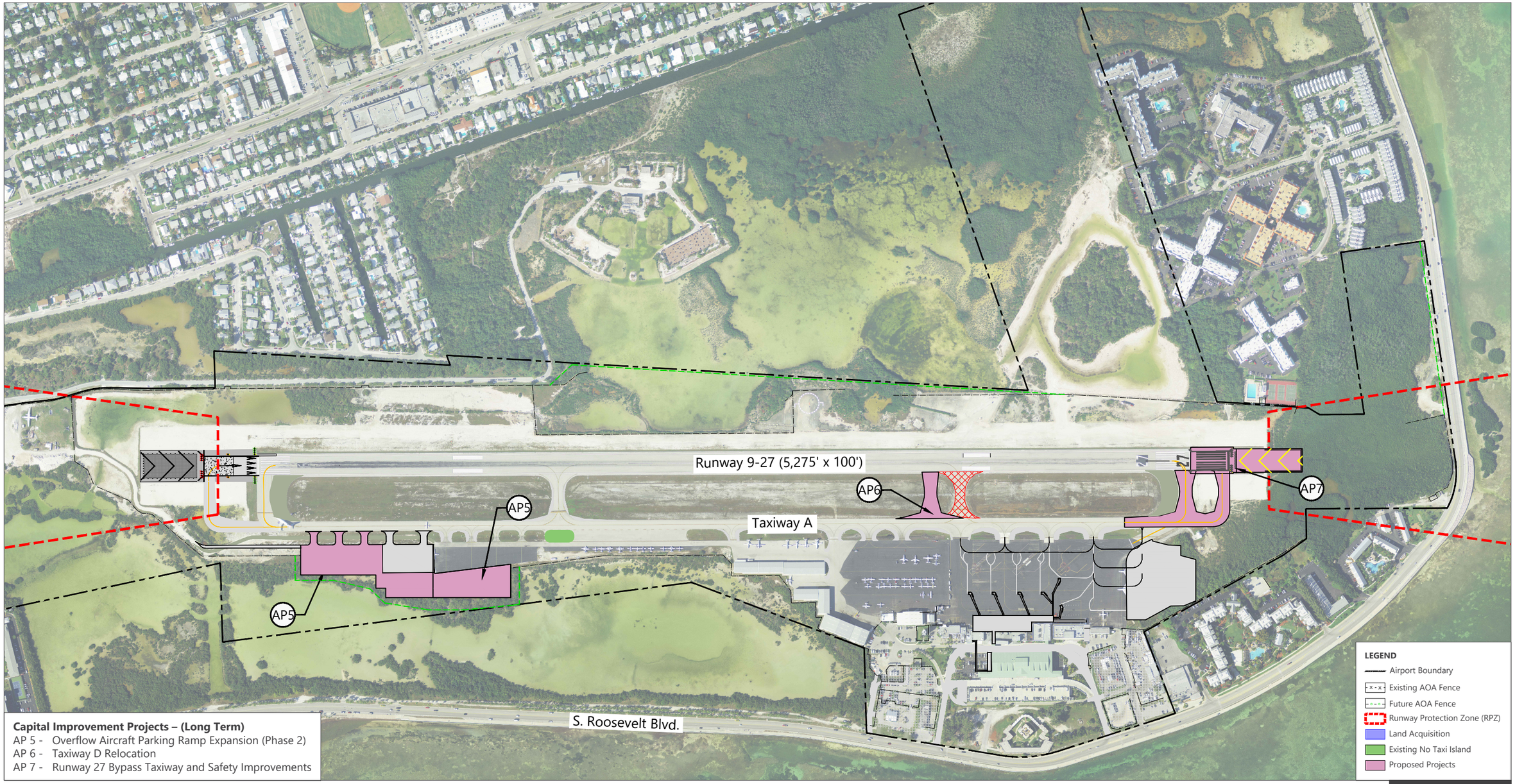
NOTES:

1/ LS – Landside; PS – Planning Study; ED – Environmental Documentation; AP – Apron;

2/ FY = October 1 through September 30. Programmed FY is based on the approved Master Plan Forecasts. Actual implementation and timeline should be correlated with actual demand levels.

SOURCES: Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., April 2018.



Capital Improvement Projects – (Long Term)
AP 5 - Overflow Aircraft Parking Ramp Expansion (Phase 2)
AP 6 - Taxiway D Relocation
AP 7 - Runway 27 Bypass Taxiway and Safety Improvements

SOURCES: Martinez Geospatial, *Basemap Planimetrics*, November 2016; Martinez Geospatial, *Aerial Photography*, April 2016.
PREPARED BY: Ricondo & Associates, Inc., January, 2019.

EXHIBIT 8-3

NORTH 0 500 ft.

Long-Term Improvement Projects (FY 2030 – FY 2035)

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8.2.2 ROUGH ORDER OF MAGNITUDE ESTIMATES

The estimated project budget presented for each identified Airport improvement reflects a preliminary opinion of the probable implementation costs for the project, including a construction contingency of 25 percent. Additionally, a soft-cost markup of 30 percent has been included to account for professional design services, bidding and permitting services, and construction administration, inspection and testing. The ROM costs were developed using 2018 U.S. dollars and have been escalated at 3 percent annually to account for inflation.

Due to the conceptual nature of this MPU's Airport plans, further refinement of the cost estimates through architectural and engineering analyses will be required. Capital costs in this document should be viewed only as estimates subject to further refinement during design as the scope for the project is confirmed or refined. The short-, intermediate-, and long-term CIP cost estimates are presented in **Table 8-4** through **Table 8-6**.

Table 8-4: Short-Term Capital Improvement Program Costs

Project ID[1]	Fiscal Year[2]	Project Description	Rough Order of Magnitude (escalated) [3, 4]
Master Plan Projects			
LS 1	2018	Terminal Arrivals Curb Modifications	$ 1,400,000
LS 2	2018	New Access Road	$ 2,200,000
TW 1	2018	Taxiway A Rehabilitation, Geometry Improvements, and Lighting - Design	$ 610,000
ED 1	2019	Environmental Assessment - Taxiway A, Commercial Apron Extension, Overflow Aircraft Parking, and Vehicle Service Road Relocation	$ 750,000
LS 3	2019	Bus Station Relocation	$ 110,000
TW 2	2019	Taxiway A Rehabilitation, Geometry Improvements, and Lighting - Construction	$ 6,500,000
PS 3	2019	Terminal Expansion and Renovation – Preliminary Design	$ 1,000,000
SF 1	2019	Maintenance Building - Design and Construction	$ 460,000
SF 2	2020	Maintenance Building - Design and Construction	$ 1,300,000
TW 3	2020	Former NWS Weather Balloon Facility Demolition	Included in TW 2 Project Costs
TW 4	2020	Taxiway A Extension and Overflow Aircraft Parking (Phase 1 – Design and Permitting	$ 850,000
SF 3	2021	Consolidated Maintenance Building - Construction	$ 930,000
TW 4, AP 3, AP 4	2021	Taxiway A Extension and Overflow Aircraft Parking (Phase 1) – Construction and Vehicle Service Road Relocation	$ 10,000,000
FE 1	2021	New Perimeter Fence	TBD
AP 1	2021	Commercial Apron Expansion - Design and Permitting	$ 850,000
AP 2	2022	Commercial Apron Expansion - Construction	$ 10,000,000
TE 6	2022	Terminal Expansion and Renovation - Design	$ 2,000,000
TE 7	2023	Terminal Expansion and Renovation - Construction (Phase 1)	$ 35,000,000[5/]
LS 4	2020-2023	Rental Car Facilities (Phase 1)	TBD
		Total Master Plan Projects Costs	**$ 73,960,000**

Table 8-4 (Cont'd): Short-Term Capital Improvement Program Costs

Project ID[1]	Fiscal Year[2]	Project Description		Rough Order of Magnitude (escalated) [3, 4]
Non-Master Plan Projects				
TE 1	2018	Terminal Improvements - Chillers	$	200,000
TE 2	2018	Terminal Restrooms and Pet Relief Design	$	230,000
NP 1	2018	Noise Insulation Program - Phase 1	$	6,100,000
TE 3	2019	Customs Expansion (Phase 3)	$	4,780,000
NP 2	2019	Noise Insulation Program - Phase 2	$	9,200,000
EQ 1	2019	Replace Existing Airport Beacon	$	410,000
TE 4	2019	Terminal Annex Modifications II & III/ Customs Upgrades (including EOC)	$	2,170,000
TE 5	2019	Restroom Renovation and SARA	$	1,700,000
NP 3	2020	Noise Insulation Program - Phase 3	$	4,500,000
NP 4	2021	Noise Insulation Program - Phase 4	$	4,500,000
EQ 5	2022	Airfield Rescue and Fire Fighting (ARFF) Equipment	$	1,000,000
NP 5	2022	Noise Insulation Program - Phase 5	$	4,100,000
NP 6	2023	Noise Insulation Program - Phase 6	$	3,900,000
SI 1-6	2018, 2019, 2020, 2021, 2022, 2023	Airport Buildings and Security Improvements	$	2,160,000
EQ 2, 3, 4, 6	2020, 2021, 2022, 2023	Essential Airport Equipment	$	1,150,000
		Total Non-Master Plan Projects Costs	**$**	**46,100,000**
		Total Project Costs	**$**	**120,060,000**

NOTES:

1/ LS – Landside; TE – Terminal; TW – Taxiway; NP – Noise Insulation Program; SI – Security Improvements; PS – Planning Study; EQ – Equipment; ED – Environmental Documentation; AP – Apron; AF – Airfield; GA – General Aviation; EOC – Emergency Operations Center; SF – Support Facility; TBD-To be Determined.

2/ FY = October 1 through September 30. Programmed FY is based on the approved Master Plan Forecasts. Actual implementation and timeline should be correlated with actual demand levels.

3/ Estimated project costs include the following soft costs: 15 percent for professional design, bidding, and permitting services (A/E); 15 percent for construction administration and resident project representative services; and a 25 percent contingency allowance.

4/ Costs developed using 2018 U.S. dollars and have been escalated at 3 percent annually for inflation.

5/ Overall projects costs including Phases 2 and 3 Construction

SOURCES: Monroe County, December 2018 (Capital Improvement Program); Jacobs, March 2018 (Master Plan Project Cost Estimates); Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., January 2018.

Table 8-5: Intermediate-Term Capital Improvement Program Costs

Project ID[1]	Fiscal Year[2]	Project Description	Rough Order of Magnitude (escalated) [3, 4]
Master Plan Projects			
LS 5	2024	Public Parking Facilities - Design	$ 420,000
LS 6	2024	Security Screening Checkpoint Expansion – Design and Construction	$ 1,930,000
ED 2	2024	Environmental Documentation – Intermediate-term projects	$ 240,000
TE 8, TE 9	2024	Terminal Expansion and Renovation - Construction (Phases 2 and 3)	Included as part of TE7
LS 5	2025	Public Parking Facilities - Construction	$ 3,100,000
ED 3	2028	Environmental Assessment – Overflow Aircraft Parking Ramp (Phase 2)	$ 700,000
PS 8	2029	Airport Master Plan Update	$ 1,400,000
AP 5	2029	Overflow Aircraft Parking Ramp Expansion (Phase 2) Design	$ 1,100,000
		Total Master Plan Projects Costs	**$ 8,890,000**
Non-Master Plan Projects			
NP 7	2024	NIP Phase 7 Construction - Homes, Grace Lutheran Church and School (Phase 1)	$ 2,600,000
NP 8	2025	NIP Phase 7 Construction - Homes, Grace Lutheran Church and School (Phase 2)	$ 3,000,000
		Total Non-Master Plan Projects Costs	**$ 5,600,000**
		Total Projects Costs	**$ 14,490,000**

Notes:

1/ LS – Landside; TE – Terminal; TW – Taxiway; NP – Noise Insulation Program; SI – Security Improvements; PS – Planning Study; EQ – Equipment; ED – Environmental Documentation; AP – Apron; AF – Airfield; GA – General Aviation

2/ FY = October 1 through September 30. Programmed FY is based on the approved Master Plan Forecasts. Actual implementation and timeline should be correlated with actual demand levels.

3/ Estimated project costs include the following soft costs: 15 percent for professional design, bidding, and permitting services (A/E); 15 percent for construction administration and resident project representative services; and a 25 percent contingency allowance.

4/ Costs developed using 2018 U.S. dollars and escalated at 3 percent annually for inflation.

SOURCES: Monroe County, December 2018 (Capital Improvement Program); Jacobs, March 2018 (Master Plan Project Cost Estimates); Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., January 2019.

Table 8-6: Long-Term Capital Improvement Program Costs

Project ID[1]	Fiscal Year[2]	Project Description		Rough Order of Magnitude (escalated)[3, 4]
Master Plan Projects				
AP 5	2030	Overflow Aircraft Parking Ramp Expansion (Phase 2)	$	11,000,000
AP 6	2031	Taxiway D Relocation	$	5,080,000
AP 7	2032	Runway 27 Bypass Taxiway and Safety Improvements		TBD
		Total Master Plan Projects Costs	**$**	**16,080,000**

NOTES:

1/ LS – Landside; TE – Terminal; TW – Taxiway; NP – Noise Insulation Program; SI – Security Improvements; PS – Planning Study; EQ – Equipment; ED – Environmental Documentation; AP – Apron; AF – Airfield; GA – General Aviation; TBD-To be Determined.

2/ FY = October 1 through September 30. Programmed FY is based on the approved Master Plan Forecasts. Actual implementation and timeline should be correlated with actual demand levels.

3/ Estimated project costs include the following soft costs: 15 percent for professional design, bidding, and permitting services (A/E); 15 percent for construction administration and resident project representative services; and a 25 percent contingency allowance.

4/ Costs developed using 2018 U.S. dollars and escalated at 3 percent annually for inflation.

SOURCES: Monroe County, December 2018 (Capital Improvement Program); Jacobs, March 2018 (Master Plan Project Cost Estimates); Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., January 2019.

8.2.3 ANTICIPATED FUNDING SOURCES

This subsection discusses the potential funding sources for the CIP. Potential sources of funding for each project identified in the Master Plan are provided in the project description sheets included in Section 8.3.

- **Federal Grants** – The United States Congress has long recognized the need to develop and maintain a system of aviation facilities across the nation for defense purposes and to promote interstate commerce. Various grant-in-aid programs for public airports have been established over the years for this purpose. The primary source of FAA-related funds is the Airport Improvement Program (AIP), which was established by the Airport and Airway Improvement Act of 1982 (Public Law 97-248). Since then, the AIP has been amended several times, most recently with the passage of the FAA Modernization and Reform Act of 2012. Funds obligated for the AIP are drawn from the Airport and Airway Trust Fund, which is supported by user fees, fuel taxes, and other similar revenue sources. Funds deposited into the Airport and Airway Trust Fund are distributed to eligible airports throughout the United States and its territories through FAA grants under appropriations limits established by Congress.

  To be eligible for AIP grants, airports must meet the following criteria: (1) publicly owned, or privately owned, but designated by the FAA as a reliever; (2) privately owned but having scheduled commercial service and at least 2,500 annual enplaned passengers; and (3) included in the NPIAS. The NPIAS is published every 2 years and identifies public-use airports that are important to public transportation and contribute to the needs of civil aviation, national defense, and the U.S. Postal Service.

In general, airport sponsors can use AIP grants for most airfield capital improvements or repairs. AIP grants cannot be used for exclusive-use areas in terminals, revenue-producing areas of terminals, hangars, or nonaviation development. Any professional services that are necessary for eligible projects, such as planning, surveying, and design, are also eligible; however, operating expenses associated with AIP projects are not eligible. Aviation demand at an airport must justify the projects, which must also meet federal environmental and procurement requirements.

AIP funding is allocated on a national priority basis. The Airport competes with other airports throughout the State of Florida and the FAA Southern Region, as well as the remainder of the country, for development grants. As in the past, federal grants are expected to be used to finance a portion of the Airport CIP. Historically, projects at the Airport have been eligible to receive 90 percent to 95 percent AIP participation. Also, in the case of security-related projects, airports may be eligible for 100 percent AIP funding. With respect to discretionary grants, it is difficult to predict a reasonable amount that can be applied to the CIP, given today's status concerning federal funding of airport-related capital projects. To the extent that projected discretionary grants are not received, the County may have to re-evaluate the phasing of the CIP and/or its funding eligibility from other sources.

Monroe County has received an average of $2.7 million in AIP entitlement grants and $4.0 million in discretionary funding over the past 5 years for projects at EYW.

- **State Grants** – A significant amount of funding for Airport capital improvements has historically come from the State of Florida. The Airport is included in the JACIP, a coordinated process between the FAA and the FDOT to plan airport capital improvements and expenditures. If the project receives federal funding, then the FDOT is expected to contribute approximately 5 percent of the funding. The FDOT will provide up to 80 percent of the funding for most non-FAA-supported airport development projects; however, only 50 percent funding is provided if the project is directly related to economic development.

  Monroe County has received an average of $1.5 million in grants from FDOT over the past 5 years for projects at EYW.

- **Sponsor Funding / Local Share** – The net remaining amount of funding required for the CIP will be derived from the County's revenues or other sources. The County's revenues are typically generated through user fees charged for the facilities and services provided. These user fees are typically established by Airport management based on market conditions in the area.

- **Passenger Facility Charges (PFC) Revenues –** PFC revenues may be used on a "pay-as-you-go" (PAYGO) basis or leveraged to pay debt service on bonds or other debt used to pay for PFC-eligible projects. Because airport sponsors may use PFC revenues for the local matching share of AIP grants, PFCs can help airport sponsors implement AIP-financed projects sooner than they would be able to otherwise. Although the FAA is required to approve the collection of a PFC and the use of PFC revenues, the PFC Program permits local collections of PFC revenues through the airlines operating at airports and provides more flexibility to airport sponsors than the AIP funding. PFCs may be used for any AIP-eligible project, although PFC eligibility is generally broader than AIP eligibility.

- **Revenue Bond Proceeds -** Proceeds from the issuance of General Airport Revenue Bonds (GARBs) and PFC Bonds can be used to fund projects included in the CIP. Future GARB and PFC debt service associated with the CIP projects are estimated based on industry standards over a bond term of thirty years.

8.3 Master Plan Project Description Sheets

For each new project identified as a part of this planning process and included in the short- and intermediate-CIP, a project description sheet has been prepared to assist the County and Airport management in applying for grants and other financial assistance. These project description sheets include some of the information necessary for the preparation of a grant application or what is typically required by the JACIP database. Each sheet is intended to facilitate the entry of planned Airport capital improvement projects into the JACIP system. Note that sheets have not been developed for supporting projects, such as the environmental documentation accompanying each project, and projects already programmed in the Airport's CIP, such as the Noise Insulation Program (NIP).

Where applicable, each project sheet also includes a diagram indicating the general location of the proposed capital improvement projects and the general limits of work associated with each project. These diagrams illustrate nearby significant Airport landmarks for reference and may be useful in coordinating future projects with funding and regulatory agencies prior to initiating design and development.

The project description sheets also include the preliminary ROM estimates based the projected limits of work and the assumptions provided. Budget estimates are based on approximate quantities and typical unit prices for similar work, and they include professional services and contingency fees, where applicable. All estimated costs and budgets in this report were developed using 2018 U.S. dollars and were escalated at 3 percent annually for inflation.

PROJECT: TW 1/2 TAXIWAY A REHABILITAITON, GEOMETRY IMPROVEMENTS, AND LIGHTING

Project Description: Project includes approximately 3,000 SY of additional pavement and the removal of approximately 5,750 SY of asphalt along Taxiway A and its associated connectors. This project also includes lighting and signage relocations or improvements and a rehabilitation of Taxiway A (4,750' x 50').

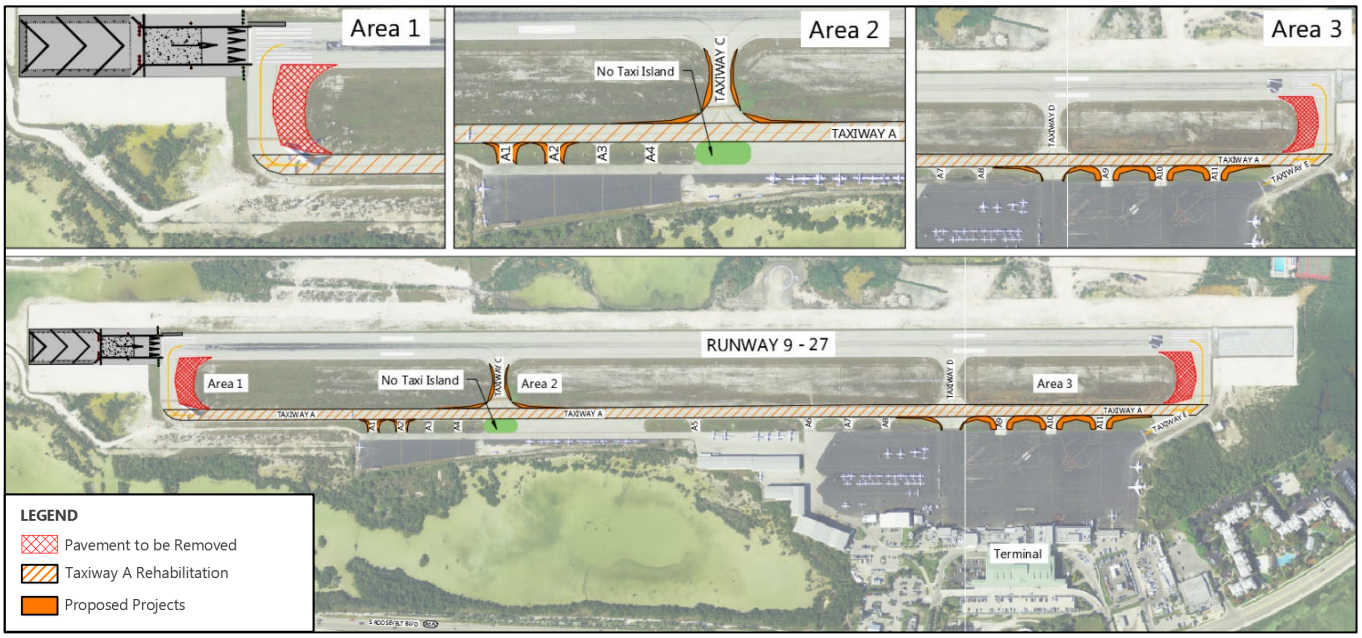
Project Justification: Improvements to the pavement geometry along Taxiway A are needed to comply with FAA design standards. Geometry improvements will include widening the Taxiway A connectors to allow for cockpit-over-centerline taxiing; removing access pavement at both the Runway 9 and Runway 27 entrances from Taxiway A; installing a no-taxi island south of Taxiway C to prevent direct access from the apron to the runway. In 2015, the average PCI for Taxiway A was 65[2]. The age of the pavement combined with the increased traffic and aircraft size has resulted in the pavement showing signs of distress and a potential generator of FOD on the taxiways.

Enabling Projects: Environmental Documentation

Anticipated Start Date: FY 2018 (Design), FY 2019 (Construction)

Initial Project Cost Estimates: Design (in 2018 dollars): $610,000, Construction (in 2019 dollars): $6,500,000

Potential Funding Sources: FAA (90 percent); FDOT (5 percent); PFC (5 percent); Local Share (0 percent)



SOURCES: Monroe County, April 2018 (Capital Improvement Program); Jacobs, March 2018 (Master Plan Project Cost Estimates); Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., April 2018.

[2] Florida Department of Transportation, *Statewide Airfield Pavement Management Program*, June 2015.

PROJECT: TW 3/4: TAXIWAY A EXTENSION

Project Location:

West of Taxiway A at the approach end of Runway 9.

Project Description:

The project will extend Taxiway A to the west at the approach end of Runway 9 with the addition of approximately 3,300 SY of asphalt including new lighting and signage. Environmental impact associated with this project will be documented as part of the Environmental Assessment.

Project Justification:

Extending Taxiway A to the west will provide additional takeoff roll without aircraft having to back taxi on the runway leading to an increase in safety with the reduction of an aircraft's runway occupancy time and the increase in takeoff distance available.

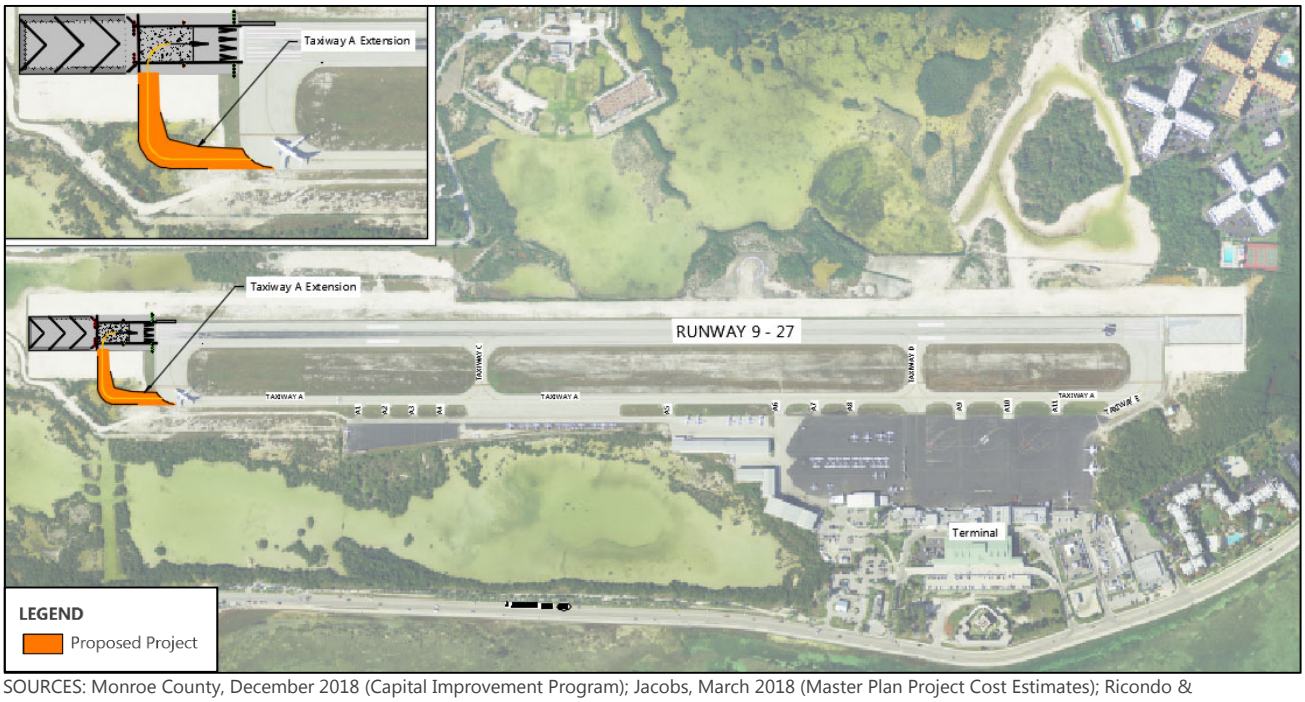
Enabling Projects:

Environmental Assessment

Anticipated Start Date: FY 2020

Initial Project Cost Estimates: The cost estimates for this project are included as part of Projects AP3 and AP4.

Potential Funding Sources: FAA (90 percent); FDOT (5 percent); PFC (5 percent); Local Share (0 percent)



SOURCES: Monroe County, December 2018 (Capital Improvement Program); Jacobs, March 2018 (Master Plan Project Cost Estimates); Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., January 2019.

PROJECT: LS 1 TERMINAL ARRIVALS CURB MODIFICATIONS

Project Location:

Terminal access roadway.

Project Description:

This project consists of improvements to Faraldo Circle to maintain two lanes through the terminal core and to eliminate an existing merge lane.; this project also includes modifications of curbsides and landscaping, as well as pavement construction of approximately 3,000 SY and restriping.

Project Justification:

The arrivals curb for private vehicles does not adequately support existing demand due to a substandard length. The existing curb is 66 linear feet, representing a LOS deficiency of over 100 linear feet. By the end of the forecast period, the anticipated requirement for arrival curb length is estimated to be 250 linear feet. This project will provide adequate space for private vehicle along the arrivals curb over the Master Plan's planning horizon.

Enabling Projects:

None

Anticipated Start Date: FY 2018

Initial Project Cost Estimates: Construction (in 2018 dollars): $1,400,000

Potential Funding Sources: FAA (0 percent); FDOT (80 percent); PFC (0 percent); Local Share (20 percent)



SOURCES: Monroe County, April 2018 (Capital Improvement Program); Jacobs, March 2018 (Master Plan Project Cost Estimates); Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., April 2018.

PROJECT: LS 2 NEW ACCESS ROAD

Project Location:

West of the Terminal core, south of existing FBOs.

Project Description:

This project consists of the construction of a new access roadway to the FBO facilities directly from S. Roosevelt Boulevard. In addition, this project eliminates two existing access points on S. Roosevelt Boulevard and provides dedicated access to the existing DMV from the newly constructed roadway (approximately 2,200 SY).

Project Justification:

A new general aviation area access road providing direct connectivity to S. Roosevelt Boulevard is necessary to increase safety for passenger vehicles and pedestrians by removing fuel trucks and delivery vehicles from the arrival curbside roadway.

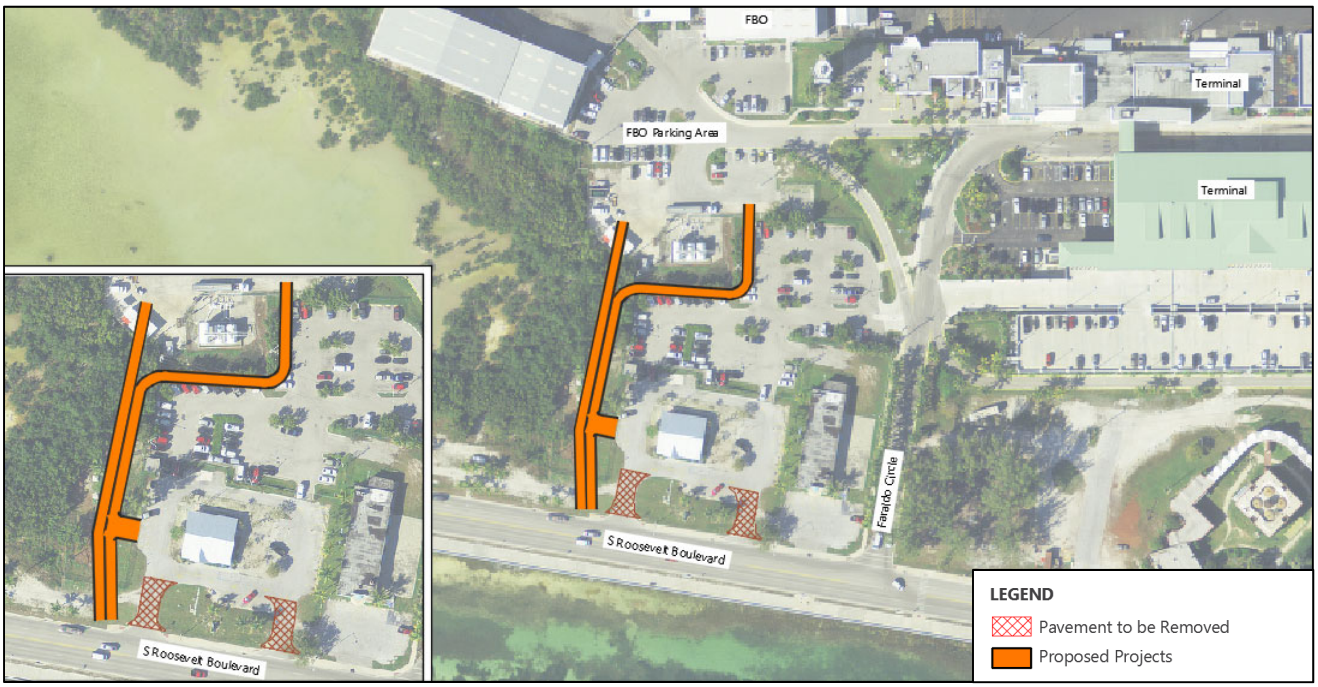
Enabling Projects:

Environmental Documentation

Anticipated Start Date: FY 2018

Initial Project Cost Estimates: Construction (in 2018 dollars): $2,200,000

Potential Funding Sources: FAA (0 percent); FDOT (0 percent); PFC (100 percent); Local Share (0 percent)



SOURCES: Monroe County, April 2018 (Capital Improvement Program); Jacobs, March 2018 (Master Plan Project Cost Estimates); Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., April 2018.

PROJECT: LS 3 BUS STATION RELOCATION

Project Location:

West of the Terminal core, south of existing fixed based operator (FBO).

Project Description:

This project consists of the construction of a dedicated covered area (approximately 450 SF) for a relocated Greyhound bus pickup/drop-off at the airport and associated office.

Project Justification:

The relocation of the Greyhound bus terminal will provide additional arrivals curb for private vehicles in front of the terminal facility.

Enabling Projects:

Environmental Documentation and General Aviation Access Road Construction

Anticipated Start Date: FY 2019

Initial Project Cost Estimates: $110,000 (in 2019 dollars)

Potential Funding Sources: FAA (0 percent); FDOT (0 percent); PFC (0 percent); Local Share (100 percent)



SOURCES: Monroe County, April 2018 (Capital Improvement Program); Jacobs, March 2018 (Master Plan Project Cost Estimates); Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., April 2018.

PROJECT: AP 1/2 COMMERCIAL APRON EXPANSION

Project Location:

East of the existing commercial apron.

Project Description:

This project includes a commercial apron expansion of 13,400 square yards of asphalt to the east to accommodate additional aircraft parking demand.

Project Justification:

Expanding the commercial terminal apron is necessary to accommodate additional aircraft during peak periods and during irregular operations. This apron will be used to park multiple large GA aircraft such as the Challenger 600 that the existing GA apron cannot currently accommodate during peak periods. Further, an expanded terminal apron will also allow for aircraft utilizing the existing eastern most apron parking positions, and aircraft utilizing the future designated CBP parking area, to power-in and power-out, rather than utilize an aircraft tug. Finally, this project is an enabling project for the Terminal Expansion and Renovation project.

Enabling Projects:

Environmental Assessment

Anticipated Start Date: FY 2021

Initial Project Cost Estimates: Design (in 2021 dollars): $850,000, Construction (in 2022 dollars): $10,000,000

Potential Funding Sources: FAA (90 percent); FDOT (5 percent); PFC (5 percent); Local Share (0 percent)



SOURCES: Monroe County, December 2018 (Capital Improvement Program); Jacobs, March 2018 (Master Plan Project Cost Estimates); Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., January 2019.

PROJECT: SF 1/2/3 CONSOLIDATED MAINTENANCE BUILDING

Project Location:

West of existing garage and south of passenger terminal.

Project Description:

This project includes the consolidation of all Airport maintenance facilities into one 1,000 SF building, which will be constructed as an extension to the west side of the existing employee parking garage. This site will be built above the stormwater retention area to avoid potential impacts to the area.

Project Justification:

A dedicated Airport maintenance building will free up approximately 20 parking spaces in the passenger parking deck that are currently being used for Airport equipment storage. To ensure an efficient maintenance operation, it is necessary to consolidate all maintenance activities and functions.

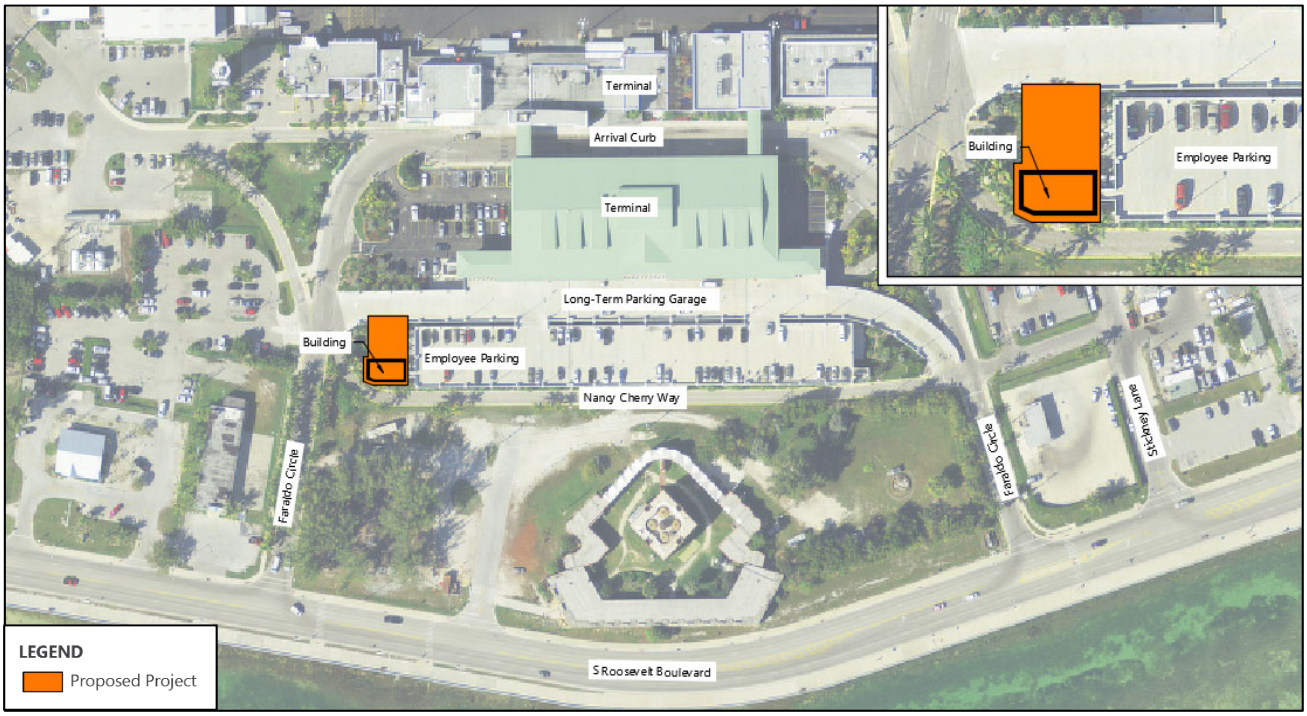
Enabling Projects:

Environmental Documentation

Anticipated Start Date: FY 2019

Initial Project Cost Estimates: Design and Construction (in 2019 dollars): $2,690,000

Potential Funding Sources: FAA (0 percent); FDOT (50 percent); PFC (0 percent); Local Share (50 percent)



SOURCES: Monroe County, April 2018 (Capital Improvement Program); Jacobs, March 2018 (Master Plan Project Cost Estimates); Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., April 2018.

PROJECT: LS 4 RENTAL CAR FACILITIES (PHASE 1)

Project Location:

To be determined.

Project Description:

This project includes the planning, design, and construction of a consolidated rental car (CONRAC) facility. The location of and concession program for the proposed facilities will be defined as part of the planning phase for this new CONRAC facility.

Project Justification:

The relocation of the rental car pick-up/drop-off parking area to a new CONRAC facility will provide additional public parking capacity. The proposed CONRAC facility would also provide an opportunity to consolidate the customer service areas currently located in the Arrivals Hall. The reclaimed area would enable the expansion of the waiting area in the Arrivals Hall for meeters and greeters and increase the area available for the retrieval of bags.

Enabling Projects:

Environmental Assessment

Anticipated Start Date: FY 2020 – FY 2023

Initial Project Cost Estimates: To be determined following the development of a concession program for the proposed facilities.

Potential Funding Sources: To be determined.

PROJECT: LS 5 PUBLIC PARKING FACILITIES (PHASE 1)

Project Location:

To be Determined.

Project Description:

This project consists of the construction of parking facilities providing approximately 150 automobile parking spaces. The location of the proposed public parking facilities will be established once the location of the CONRAC facilities is defined.

Project Justification:

The public parking garage is nearing capacity during normal activities, and it regularly exceeds capacity during peak periods. Based on the Master Plan projections, a minimum of 63 additional parking spaces will be needed by 2035. Thus, new parking facilities will allow the airport to satisfy forecast parking demand through the planning horizon and beyond.

Enabling Projects:

Environmental Documentation and the relocation of Monroe County's Maintenance Facilities and Storage.

Anticipated Start Date: FY 2024

Initial Project Cost Estimates: Design (in 2024 dollars): $420,000, Construction (in 2025 dollars): $3,100,000

Potential Funding Sources: FAA (0 percent); FDOT (0 percent); PFC (0 percent); Local Share (100 percent)

PROJECT: PS 3 and TE 6 - 9 TERMINAL EXPANSION AND RENOVATIONS

Project Location: Passenger terminal areas.

Project Description: This project includes the construction of a new second-floor concourse totally 19,500 SF to the north of the existing terminal facility. This concourse will accommodate new holdrooms, concession spaces, restrooms, and five boarding bridges, and it will connect the existing landside terminal and proposed building via the existing departure bridge. The existing terminal will be improved and renovated to meet future demand with the addition of a new baggage claim, an expanded 1,000 SF baggage makeup area, and the creation of a turboprop holdroom. An 1,800-square-foot extension of the existing passenger processing building will take place at the security screening checkpoint to accommodate a new security checkpoint lane. This project includes a Project Definition Document (PDD) to define the project scope, design, construction, and operational parameters.

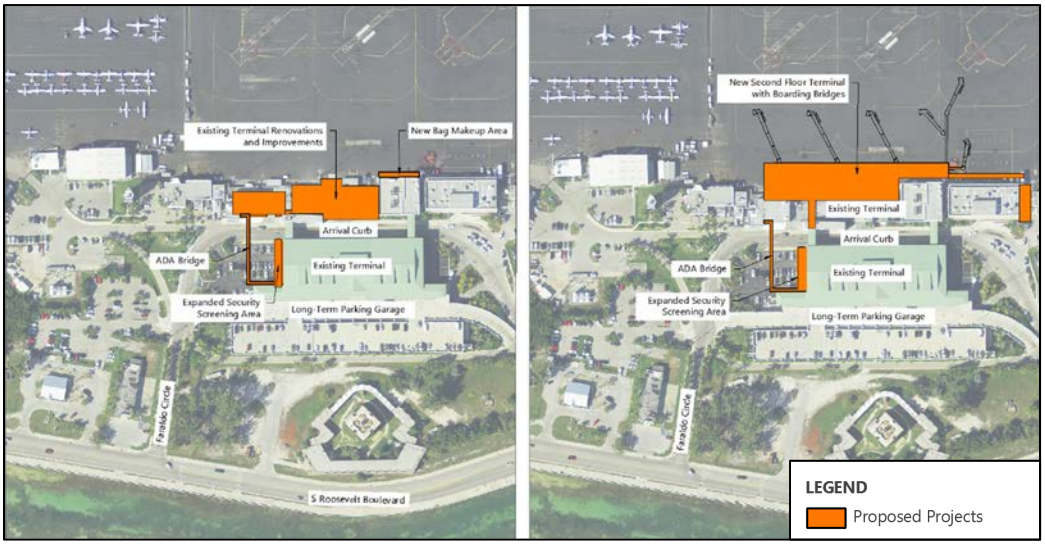
Project Justification: Throughout the planning period, EYW is forecast to have deficiencies in check-in positions (one position), security screening checkpoints (one lane), passenger hold room space (1,500 square feet), baggage makeup areas (2,000 square feet), and baggage claim (2,500 square feet). This project includes the expansion and improvement of the passenger terminal facilities to meet forecast demand. The project will reduce existing congestion in the holdrooms and baggage claim area, and it will provide the infrastructure to accommodate increased passenger traffic.

Enabling Projects: Short Form Environmental Assessment; Commercial Apron Expansion

Anticipated Start Date: FY 2019

Initial Project Cost Estimates: PDD (in 2019 dollars): $1,000,000, Design (in 2022 dollars): $2,000,000, Construction (in 2023 dollars): $35,000,000

Potential Funding Sources: GARBS and PFC



SOURCES: Monroe County, December 2018 (Capital Improvement Program); Jacobs, March 2018 (Master Plan Project Cost Estimates); Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., January 2019.

PROJECT: PS 8 AIRPORT MASTER PLAN UPDATE

Project Location:

Key West International Airport (Airport wide)

Project Description:

An airport master plan is a comprehensive study of an airports short-, medium-, and long-term development plan to meet future (20-year) aviation demand.

Project Justification:

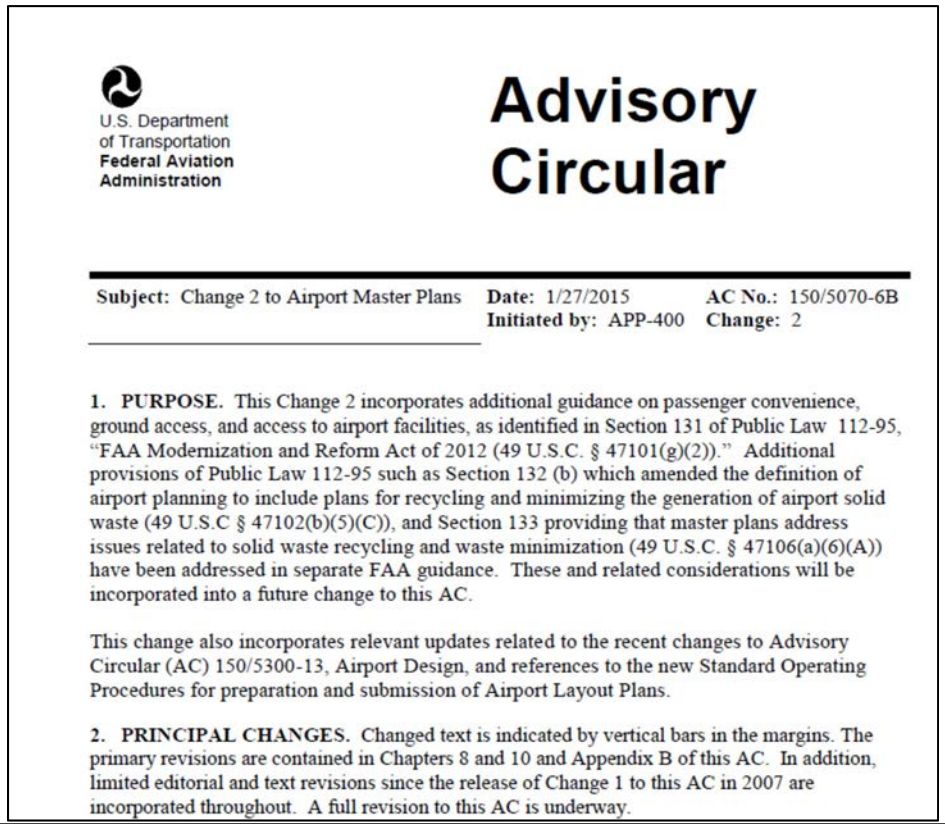
The Federal Aviation Administration (FAA) recommends continued updates to airports master plan every 10 years to accurately reflect the airports current and future aviation demand at the time in which the master plan update is initiated. A master plan update will be needed to revisit the intermediate and long-term projects identified in the 2018 Master Plan Update to ensure that they remain effective and accurately reflect the aviation demand of the airport as well as the financial, community, environmental, and socioeconomic issues and concerns of the communities surrounding the Key West International Airport.

Enabling Projects: None

Anticipated Start Date: FY 2029

Initial Project Cost Estimates: (in 2029 dollars) $1,400,000

Potential Funding Sources: FAA (90 percent); FDOT (5 percent); PFC (0 percent); Local Share (5 percent)



U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Change 2 to Airport Master Plans **Date:** 1/27/2015 **AC No.:** 150/5070-6B
Initiated by: APP-400 **Change:** 2

1. PURPOSE. This Change 2 incorporates additional guidance on passenger convenience, ground access, and access to airport facilities, as identified in Section 131 of Public Law 112-95, "FAA Modernization and Reform Act of 2012 (49 U.S.C. § 47101(g)(2))." Additional provisions of Public Law 112-95 such as Section 132 (b) which amended the definition of airport planning to include plans for recycling and minimizing the generation of airport solid waste (49 U.S.C § 47102(b)(5)(C)), and Section 133 providing that master plans address issues related to solid waste recycling and waste minimization (49 U.S.C. § 47106(a)(6)(A)) have been addressed in separate FAA guidance. These and related considerations will be incorporated into a future change to this AC.

This change also incorporates relevant updates related to the recent changes to Advisory Circular (AC) 150/5300-13, Airport Design, and references to the new Standard Operating Procedures for preparation and submission of Airport Layout Plans.

2. PRINCIPAL CHANGES. Changed text is indicated by vertical bars in the margins. The primary revisions are contained in Chapters 8 and 10 and Appendix B of this AC. In addition, limited editorial and text revisions since the release of Change 1 to this AC in 2007 are incorporated throughout. A full revision to this AC is underway.

PROJECT: AP 3, AP4 OVERFLOW AIRCRAFT PARKING (PHASE 1)

Project Location:

South of Taxiway A near the end of Runway 9.

Project Description:

This project consists of an additional 5,000 square yards of asphalt for a parking apron and up to two connectors to Taxiway A, as well as the relocation of the service road located south of Taxiway A.

Project Justification:

A new apron area constructed to FAA design standards, including access, signage, marking, and lighting, is needed to park, fuel, and tie-down transient and based aircraft. During peak times, the existing ramp is at capacity and there are no available aircraft parking spaces. The proposed ramp will provide additional ramp capacity, especially for the accommodation of general aviation aircraft. The service road needs to be relocated outside the Taxiway A object free area to meet FAA design standards, as stipulated in FAA 5300-13A, Change 1.

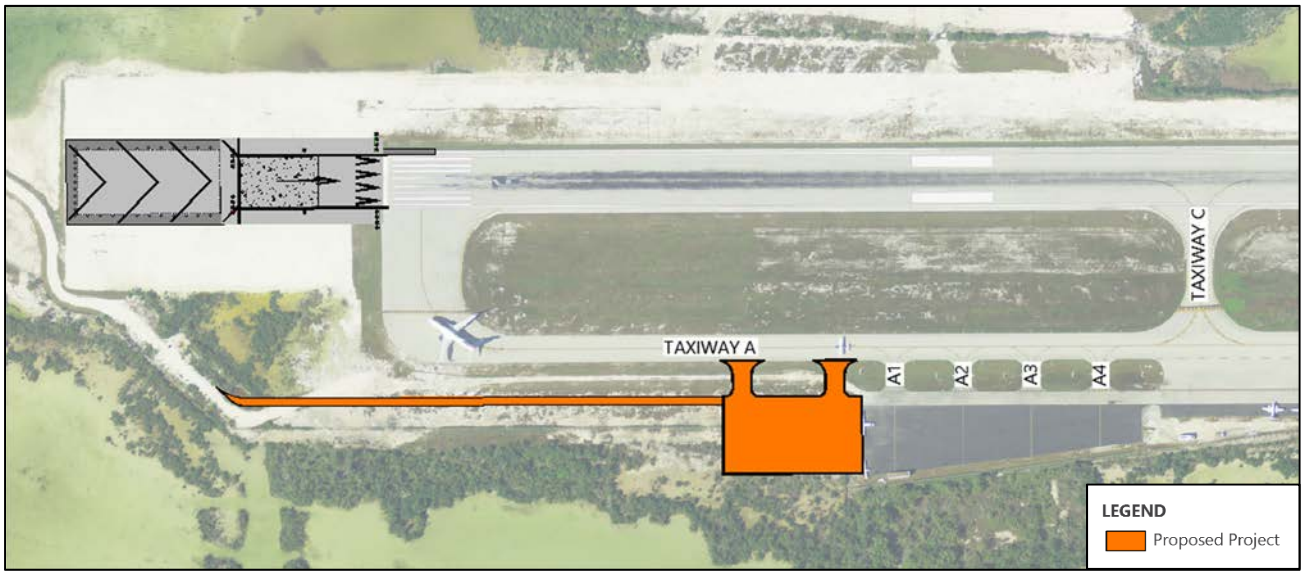
Enabling Projects:

Environmental Assessment

Anticipated Start Date: FY 2020

Initial Project Cost Estimates: Design (in 2020 dollars): $850,000, Construction (in 2021 dollars): $10,000,000

Potential Funding Sources: FAA (90 percent); FDOT (5 percent); PFC (0 percent); Local Share (5 percent)



SOURCES: Monroe County, April 2018 (Capital Improvement Program); Jacobs, March 2018 (Master Plan Project Cost Estimates); Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., April 2018.

PROJECT: FE 1 NEW PERIMETER FENCE

Project Location:

North of Runway 9

Project Description:

A new section of AOA fence would be installed on the north side of the runway. The fencing could be a buoy system across the water with support posts in the upland area.

Project Justification:

The surrounding water is used for recreational canoeing and kayaking. The fencing is needed to prevent unauthorized access to the airfield.

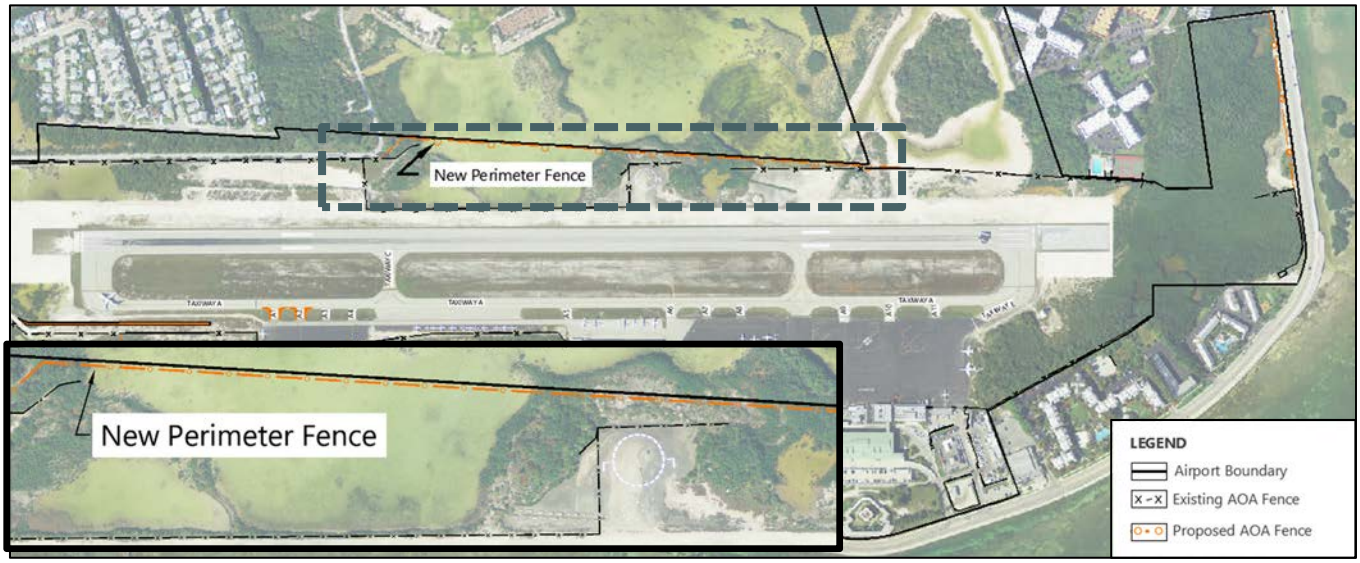
Enabling Projects:

Environmental Assessment

Anticipated Start Date: FY 2020

Initial Project Cost Estimates: To be determined.

Potential Funding Sources: To be determined.



SOURCES: Monroe County, February 2019 (Capital Improvement Program)

PREPARED BY: Ricondo & Associates, Inc., February 2019.

PROJECT: LS 6 SECURITY SCREENING CHECKPOINT EXPANSION

Project Location:

West of the existing landside terminal.

Project Description:

This project proposes the construction of an 1,800-square-foot building extension to the west of the existing security checkpoint to include the third checkpoint lane and to retain the exit lane corridor.

Project Justification:

One additional checkpoint lane will be required between 2020 and 2025 to accommodate both the increasing demand levels and the ability to accommodate Pre✓ passengers.

Enabling Projects:

Short Form Environmental Assessment

Anticipated Start Date: FY 2024

Initial Project Cost Estimates: $1,930,000

Potential Funding Sources: PFC



SOURCES: Monroe County, December 2018 (Capital Improvement Program); Jacobs, March 2018 (Master Plan Project Cost Estimates); Ricondo & Associates, Inc., May 2018.

PREPARED BY: Ricondo & Associates, Inc., January 2019.

PROJECT: AP 5 OVERFLOW AIRCRAFT PARKING EXPANSION (PHASE 2)

Project Location:

West of the Overflow Aircraft Parking Expansion to be built in Phase 1.

Project Description:

This project consists of an additional 24,000 square yards of asphalt for a parking apron and up to three connectors to Taxiway A, as well as the relocation of the service road located south of Taxiway A. This new apron will be designed to FAA design standards, including access, signage, marking, and lighting.

Project Justification:

It is anticipated that the apron area to be constructed in FY 2021 would need to be expanded to accommodate additional aircraft parking positions. The proposed ramp will provide additional capacity for the accommodation of general aviation aircraft.

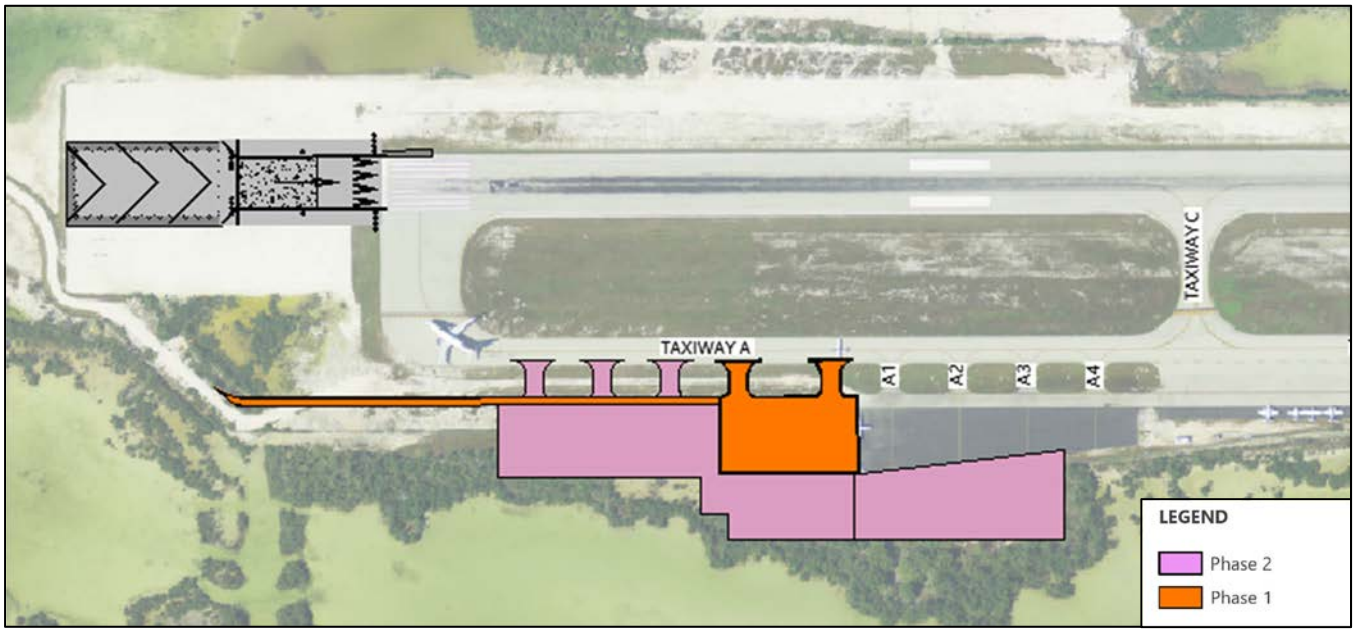
Enabling Projects:

Environmental Assessment

Anticipated Start Date: FY 2031

Initial Project Cost Estimates: To be determined.

Potential Funding Sources: FAA (90 percent); FDOT (5 percent); PFC (0 percent); Local Share (5 percent)



SOURCES: Monroe County, February 2019 (Capital Improvement Program)

PREPARED BY: Ricondo & Associates, Inc., February 2019.

PROJECT: AP 6 TAXIWAY DELTA RELOCATION

Project Location:

Taxiway D between Runway 9-27 and Taxiway A.

Project Description:

This project provides for the relocation of Taxiway D 150 feet west to mitigate the direct access from the apron to the runway (in compliance with FAA AC 150/5300-13A).

Project Justification:

The relocation of Taxiway D is required to avoid the direct access from the existing apron to the runway.

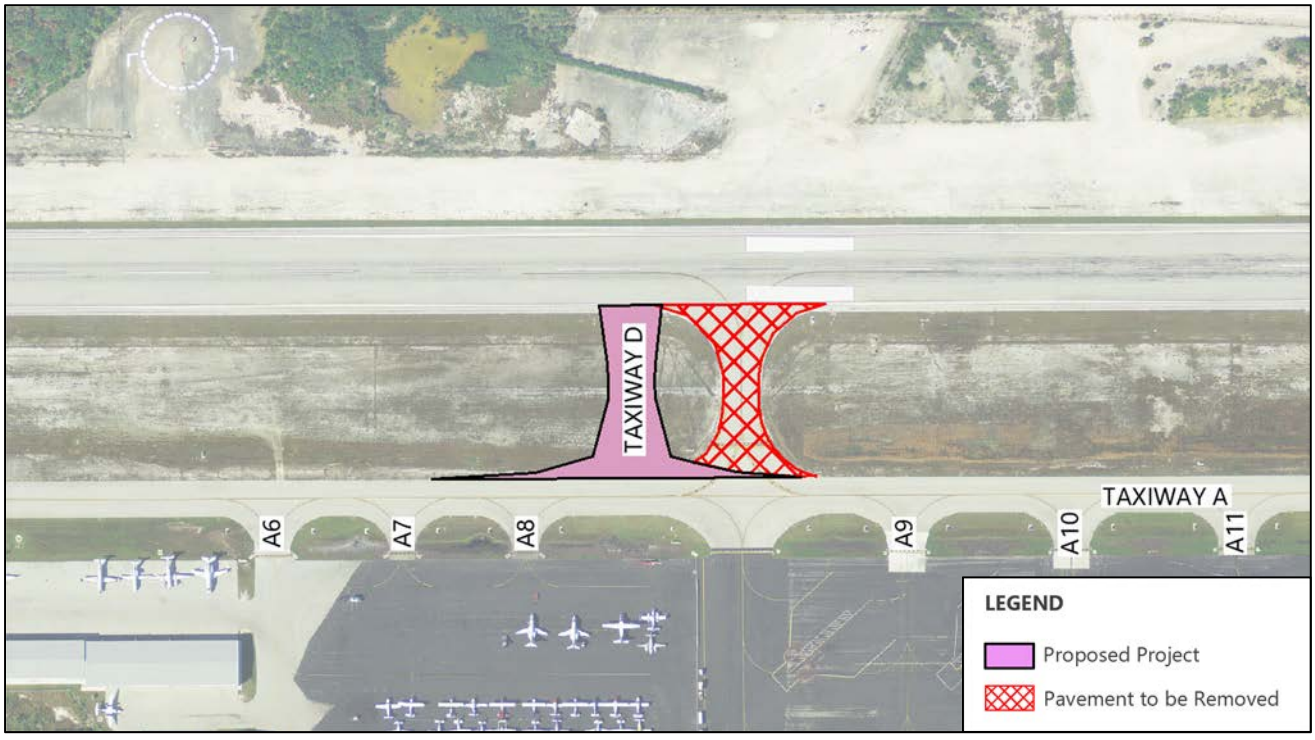
Enabling Projects:

Environmental Assessment

Anticipated Start Date: FY 2031

Initial Project Cost Estimates: To be determined.

Potential Funding Sources: FAA (90 percent); FDOT (5 percent); PFC (0 percent); Local Share (5 percent)



SOURCES: Monroe County, February 2019 (Capital Improvement Program)

PREPARED BY: Ricondo & Associates, Inc., February 2019

PROJECT: AP 7 RUNWAY 27 BYPASS TAXIWAY AND SAFETY IMPROVEMENTS

Project Location:

Runway 27 End.

Project Description:

The proposed taxiway geometry improvements would allow for the construction of a bypass taxiway to help mitigate potential delay at the Runway 27 end. The separation distance between the proposed taxiway connectors is 200 feet in compliance with FAA standards for ADG III aircraft. This project would also include the construction of an Engineered Material Arresting System (EMAS) beyond the relocated Runway 27 end to provide a level of safety that is generally equivalent to a full Runway Safety Area (RSA) built to the dimensional standards in AC 150/5300-13A, *Airport Design*.

Project Justification:

The proposed taxiway geometry improvements would help mitigate potential delay at the Runway 27 end. The additional runway length resulting from these improvements would also provide airlines the ability to serve Boston, New York, and Toronto without any weight restrictions.

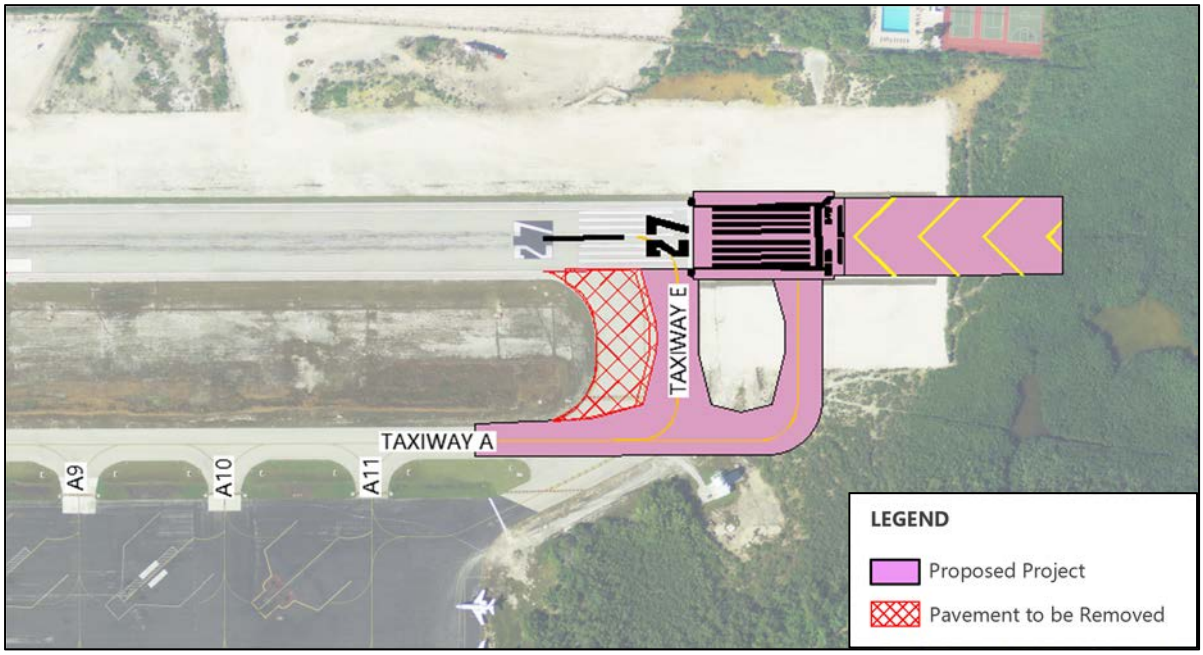
Enabling Projects:

Environmental Assessment

Anticipated Start Date: FY 2031

Initial Project Cost Estimates: To be determined.

Potential Funding Sources: FAA (90 percent); FDOT (5 percent); PFC (0 percent); Local Share (5 percent)



SOURCES: Monroe County, February 2019 (Capital Improvement Program)

PREPARED BY: Ricondo & Associates, Inc., February 2019.

Chapter 9

Financial Plan

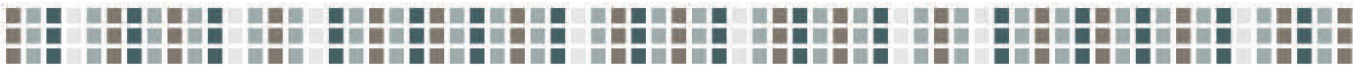


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9. Funding Plan

This section presents a potential funding plan for implementing the CIP projects recommended in the MPU. It also assesses the ability of the County to fund the recommended projects associated with the preferred alternatives. These projects are designed to provide the required improvements and facilities at the Airport from fiscal year (FY) 2018 through FY 2035 (Planning Period).

The actual implementation schedule for the various construction projects will be influenced by demand, funding availability, the County's priorities, and other relevant factors, and it may not correspond precisely to the schedule described in this section. For purposes of the illustrative financial analysis, a specific implementation schedule was assumed. However, it should be noted that this schedule and the resulting financial analyses are intended only to demonstrate financial feasibility. Actual funding strategies for each project will be determined at the time of project implementation.

The following actions were taken to conduct the MPU's financial analysis:

- Review the Airport's financial structure and obtain financial information.
- Compile a list of proposed capital development projects, including estimated project construction costs and construction start and end dates.
- Identify potential funding sources; analyze the potential availability of funding from those sources, as applicable.
- Calculate debt service for projects funded, in part, with future bond proceeds.
- Calculate amortization for Airport-funded projects.
- Develop projections of operating and maintenance (O&M) expenses and non-airline revenues.
- Calculate airline revenues and rates and charges to assess the impact of the projects on key financial metrics, such as airline rates and charges, cost per enplaned passenger (CPE), and debt service coverage.

9.1 Airport Financial Structure

The County owns and operates the Airport through the Monroe County Board of County Commissioners (BOCC) as a separate enterprise fund of the County. The BOCC manages the Airport through the County Administrator, the Senior Director of Airports, and the Assistant Director of Airports, who oversee daily operations. The Airport is not a legally separate or fiscally independent unit of the County. Therefore, it is considered a part of the County's primary government, and it is included as such in the Monroe County Comprehensive Annual Financial Report. The County and Airport operate on a 12-month FY ending September 30.

Airline use agreements between the County and the airlines serving the Airport expired on June 30, 2000. Subsequently, it was determined that future airline rates, fees, and charges should be calculated using a compensatory cost-recovery method. This methodology calculates airline rates and charges by allocating costs from the Airport's annual budget of costs and expenses to various functional cost centers. These costs are recovered from the users of each cost center. With this compensatory methodology of calculating rates and charges, the airlines only pay the costs associated with the space and facilities they use. In addition, without an airline use agreement, the airlines are free to enter or depart the market at will, with no residual financial obligations. The County is entitled to use non-airline revenues in the terminal and other facilities for contingencies and to further develop the Airport.

Since the airline-use agreements expired in 2000, landing fees and terminal rents at the Airport have been recalculated in consultation with the airlines serving the Airport and have been established by County ordinance annually. The most recent airline rates and charges were recalculated for FY 2018 and adopted by the County on October 18, 2017. As of FY 2018, the airlines providing scheduled service to the Airport are American Airlines, Delta Air Lines, Silver Airways, and United Airlines.

The County's expenses and revenues are categorized into cost centers, which include areas or functional activities of the Airport that are used for the purposes of accounting for revenues, O&M expenses, contractual services for security, and debt service, as applicable. The following are the Airport's cost centers:

- **Airfield**: portions of the Airport provided for the landing, taking off, and taxiing of aircraft, including runways, taxiways, approach and runway protection zones, safety areas, infield areas, landing and navigational aids, aircraft parking apron, and land areas required by or related to aeronautical use of the Airport
- **Terminal**: commercial airline facilities at the Airport, including the terminal building and associated land, facilities, and equipment, whether owned, operated, or maintained by the County
- **General Aviation (GA)**: properties and areas designated for GA use
- **Other**: all other properties and areas associated with the Airport

9.2 Capital Improvement Program – Projects and Funding Plan

The CIP presents a comprehensive list of projects identified as part of the master planning process (Master Plan Projects) and projects currently listed on the existing ACIP that are not discussed in detail in the MPU (Non–Master Plan Projects). These CIP projects address recommended improvements throughout the Planning Period. Projects are scheduled within one of three planning phases: FY 2018 through FY 2023 (short-term improvements), FY 2024 through FY 2029 (intermediate-term improvements), and FY 2030 through FY 2035 (long-term improvements).

Although projects are organized by phase, implementation of these projects may be adjusted to accommodate actual growth and demand at the Airport. Project costs were escalated to consider the effect of inflation and to consider costs related to construction, engineering, construction management/administration, and other contingencies. The costs should be considered preliminary, and it must be recognized that each project may require additional planning, environmental documentation, and/or design.

9.2.1 PROJECTS

Table 9-1 presents the estimated costs of the CIP projects expected to be implemented through FY 2035. The total estimated cost of the CIP in escalated dollars is approximately $150.6 million. Estimated costs were escalated from 2018 dollars at an annual rate of 3.0 percent, and they include construction contingencies, construction administration, and engineering/design services. For these projects, it was assumed that design would occur in one fiscal year, with construction commencing in the following fiscal year.

Recognizing the conceptual nature of a master plan, implementation of certain capital development projects would occur only after further refinement through advanced planning and programming, as well as through engineering and architectural analyses. Therefore, the estimated CIP costs developed for purposes of this funding plan must be viewed as preliminary; they reflect a master plan level of detail subject to refinement in subsequent implementation phases.

9.2.1.1 Master Plan Projects

As shown in Table 9-1, Master Plan Projects are estimated to total approximately $98.9 million. These costs are associated with landside, taxiway, support facilities, environmental documentation, apron, planning study, and terminal projects. The following are the key Master Plan Projects grouped by planning phase:

Short Term

- Terminal Arrivals Curb Modifications (depicted as project LS1): This $1.4 million project consists of improvements to Faraldo Circle to maintain two lanes through the terminal core and eliminate the existing merge lane.
- New Access Road (listed as project LS2): This approximately $2.2 million project consists of the construction of a new access roadway to the FBO facilities directly from S. Roosevelt Boulevard. In addition, this project eliminates two existing access points on S. Roosevelt Boulevard and provides dedicated access to the existing Department of Motor Vehicles from the newly constructed roadway (approximately 2,200 square yards).

Table 9-1 (1 of 2): Capital Improvement Program Estimated Costs and Annual Expenditures

PROJECT ID [1/]	PROJECT DESCRIPTION	TOTAL COSTS [2/]	ESTIMATED ANNUAL PROJECT EXPENDITURES																	
			SHORT-TERM						INTERMEDIATE TERM						LONG TERM					
			2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Master Plan Projects																				
LS 1	Terminal Arrivals Curb Modifications	$1,400,000	$1,400,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
LS 2	New Access Road	$2,200,000	$2,200,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
TW 1	Taxiway A Rehabilitation, Geometry Improvements, and Lighting - Design	$610,000	$610,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
LS 3	Greyhound Bus Station	$110,000	$-	$110,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
TW 2	Taxiway A Rehabilitation, Geometry Improvements, and Lighting - Construction	$6,500,000	$-	$6,500,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
SF 1	Maintenance Building - Design and Construction	$460,000	$-	$460,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
SF 2	Maintenance Building - Design and Construction	$1,300,000	$-	$-	$1,300,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
ED 1	Environmental Assessment - Taxiway A and Commercial Apron Extension	$750,000	$-	$750,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
SF 3	Consolidated Maintenance Building - Construction	$930,000	$-	$-	$-	$930,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
TW 3	Taxiway A Extension and Apron Expansion- Design and Permitting	$850,000	$-	$-	$850,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
TW 4	Taxiway A Extension and Apron Extension- Construction	$10,000,000	$-	$-	$-	$10,000,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
AP 1	Commercial Apron Expansion - Design and Permitting	$850,000	$-	$-	$-	$850,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
AP 2	Commercial Apron Expansion - Construction	$10,000,000	$-	$-	$-	$-	$10,000,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
LS 4	Public Parking Lot - Surface Lot - Design	$420,000	$-	$-	$-	$-	$-	$-	$420,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
ED 2	Environmental Documentation	$240,000	$-	$-	$-	$-	$-	$-	$240,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
LS 6	Security Screening Checkpoint Expansion	$1,930,000	$-	$-	$-	$-	$-	$-	$1,930,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
PS 7	Terminal Expansion and Renovation - Preliminary Design	$1,000,000	$-	$1,000,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
LS 5	Public Parking Lot - Surface Lot - Construction	$3,100,000	$-	$-	$-	$-	$-	$-	$-	$3,100,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
TE 5	Terminal Expansion and Renovation - Design	$2,000,000	$-	$-	$-	$-	$2,000,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
TE 7	Terminal Expansion and Renovation - Construction	$35,000,000	$-	$-	$-	$-	$-	$35,000,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
ED 3	Environmental Assessment - Overflow Aircraft Parking Ramp Expansion (Phase 2)	$700,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$700,000	$-	$-	$-	$-	$-	$-	$-
AP 3	Overflow Aircraft Parking Ramp Expansion Phase 2 - Design	$1,100,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$1,100,000	$-	$-	$-	$-	$-	$-
PS 8	Airport Master Plan Update	$1,400,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$1,400,000	$-	$-	$-	$-	$-	$-
AP 4	Overflow Aircraft Parking Ramp Expansion Phase 2 - Construction	$11,000,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$11,000,000	$-	$-	$-	$-	$-
PS 9	Consolidate Rental Car Facilities	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
AP 6	Taxiway D Relocation	$5,080,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$5,080,000	$-	$-	$-	$-
AP 7	Runway 27 Bypass Taxiway and Safety Improvements	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
	Total Master Plan Projects	$98,930,000	$4,210,000	$8,820,000	$2,150,000	$11,780,000	$12,000,000	$35,000,000	$2,590,000	$3,100,000	$-	$-	$700,000	$2,500,000	$11,000,000	$5,080,000	$-	$-	$-	$-

Table 9-1 (2 of 2): Capital Improvement Program Estimated Costs and Annual Expenditures

			ESTIMATED ANNUAL PROJECT EXPENDITURES																	
			SHORT-TERM						INTERMEDIATE TERM						LONG TERM					
PROJECT ID [1/]	PROJECT DESCRIPTION	TOTAL COSTS [2/]	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Non-Master Plan Projects																				
TE 1	Terminal Improvements - Chillers	$200,000	$200,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
TE 2	Terminal Restrooms and Pet Relief Design	$230,000	$230,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
NP 1	Noise Insulation Program - Phase 1	$6,100,000	$6,100,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
TE 3	Customs Expansion (Phase 3)	$4,780,000	$-	$4,780,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
SI 1	Airport Buildings and Security Improvements	$460,000	$460,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
SI 2	Airport Buildings and Security Improvements	$500,000	$-	$500,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
SI 3	Airport Buildings and Security Improvements	$300,000	$-	$-	$300,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
SI 4	Airport Buildings and Security Improvements	$300,000	$-	$-	$-	$300,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
SI 5	Airport Buildings and Security Improvements	$300,000	$-	$-	$-	$-	$300,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
SI 6	Airport Buildings and Security Improvements	$300,000	$-	$-	$-	$-	$-	$300,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
NP 2	Noise Insulation Program - Phase 2	$9,200,000	$-	$9,200,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
EQ 1	Replace Existing Airport Beacon	$410,000	$-	$410,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
EQ 2	Essential Airport Equipment	$200,000	$-	$-	$200,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
EQ 3	Essential Airport Equipment	$300,000	$-	$-	$-	$300,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
EQ 4	Essential Airport Equipment	$350,000	$-	$-	$-	$-	$350,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
EQ 5	ARFF/Fire Support Equipment	$1,000,000	$-	$-	$-	$-	$1,000,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
EQ 6	Essential Airport Equipment	$300,000	$-	$-	$-	$-	$-	$300,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
TE 4	Terminal Annex Modifications II & III/ Customs Upgrades (including EOC)	$2,170,000	$-	$2,170,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
TE 5	Restroom Renovation and SARA	$1,700,000	$-	$1,700,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
NP 3	Noise Insulation Program - Phase 3	$4,500,000	$-	$-	$4,500,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
NP 4	Noise Insulation Program - Phase 4	$4,500,000	$-	$-	$-	$4,500,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
NP 5	Noise Insulation Program - Phase 5	$4,100,000	$-	$-	$-	$-	$4,100,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
NP 6	Noise Insulation Program - Phase 6	$3,900,000	$-	$-	$-	$-	$-	$3,900,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
NP 7	Noise Insulation Program - Phase 7	$2,600,000	$-	$-	$-	$-	$-	$-	$2,600,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
NP 8	Noise Insulation Program - Phase 8	$3,000,000	$-	$-	$-	$-	$-	$-	$-	$3,000,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
	Total Non-Master Plan Projects	**$51,700,000**	**$6,990,000**	**$18,760,000**	**$5,000,000**	**$5,100,000**	**$5,750,000**	**$4,500,000**	**$2,600,000**	**$3,000,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
	Total CIP	**$150,630,000**	**$11,200,000**	**$27,580,000**	**$7,150,000**	**$16,880,000**	**$17,750,000**	**$39,500,000**	**$5,190,000**	**$6,100,000**	**$0**	**$0**	**$700,000**	**$2,500,000**	**$11,000,000**	**$5,080,000**	**$0**	**$0**	**$0**	**$0**

NOTES: FY ending September 30. Numbers may not add due to rounding.

1/ LS – Landside; TE – Terminal; TW – Taxiway; NP – Noise Insulation Program; SI – Security Improvements; PS – Planning Study; EQ – Equipment; ED – Environmental Documentation; AP – Apron; AF – Airfield; GA – General Aviation; EOC – Emergency Operations Center; SF – Support Facilities; CIP – Capital Improvement Program

2/ Costs developed using 2018 U.S. dollars and have been escalated at 3 percent annually for inflation.

SOURCE: Monroe County Department of Airports, March 2019.

- Taxiway A Rehabilitation, Geometry Improvements, and Lighting (listed as project TW 1-2): This $7.1 million project will include the design and construction of approximately 3,000 square yards of additional pavement and the removal of approximately 5,750 square yards of asphalt along Taxiway A and its associated connectors. This project also includes lighting and signage relocations or improvements and a rehabilitation of Taxiway A (4,750 feet by 50 feet).
- Taxiway A Extension and Overflow Aircraft Parking Apron Expansion (listed as project TW 3-4): This approximately $10.8 million project will include design, permitting, and construction costs. This project will extend Taxiway A to the west at the approach end of Runway 9 with the addition of approximately 3,300 square yards of asphalt, including new lighting and signage. This project also includes the construction of approximately 5,000 square yards of ramp to provide additional aircraft parking positions. This ramp will be used to park aircraft that cannot be accommodated on the existing apron areas.
- Environmental Documentation (listed as ED 1): The project costs include the development of an Environmental Assessment (EA) for the Taxiway A Extension, the Commercial Apron Expansion Project, the Overflow Aircraft Parking Ramp project, and the Vehicle Service Road Relocation project.
- Bus Station Relocation (depicted as project LS3): This project involves relocating the bus pickup/drop-off currently leased to Greyhound and associated office at the Airport.
- Consolidated Maintenance Building (depicted as project SF 1-3): This project includes the consolidation of all Airport maintenance facilities into one building, which will be constructed as an extension to the west side of the existing employee parking garage.
- Commercial Apron Expansion (listed as project AP 1-2): This approximately $10.8 million project will include design, permitting, and construction costs. This project includes a commercial apron expansion of 13,400 square yards of asphalt to the east to accommodate additional aircraft parking demand.
- Terminal Expansion and Renovation (depicted as project PS 7, TE 5 and TE 7): This $38.0 million project includes the construction of second-floor concourse to the north of the existing terminal facility. This concourse will accommodate new holdrooms, concession spaces, restrooms, and five boarding bridges, and will connect the existing landside terminal and proposed building via the existing departure bridge. In addition, the existing terminal will be improved and renovated to meet forecast demand with the addition of a new baggage claim, an expanded baggage makeup area, and the creation of a turboprop holdroom.

Intermediate Term

- Public Parking Facilities – Phase 1 (listed as project LS 4-5): This approximately $3.5 million project includes the planning, design, and construction of a new public parking lot and/or garage.
- Security Screening Checkpoint Expansion (depicted as project LS 6): This $1.9 million project proposes the construction of an 1,800-square-foot building extension to the west of the existing security checkpoint to include a third security screening checkpoint lane.
- Airport Master Plan Update (project PS 8): This $1.4 million project will update the Airport Master Plan.
- Environmental Documentation (listed as ED 2-3): The projects costs include the preparation of environmental documentation for federally funded projects within the intermediate term period including the overflow aircraft parking ramp expansion (Phase 2).

Long Term

- Overflow Aircraft Parking Ramp Expansion (Phase 2) (depicted as project AP 3-4): This $12.1 million project consists of the design and construction of an additional 24,000 square yards of parking apron to park, fuel, and tie-down transient and based aircraft.
- Taxiway D Relocation (depicted as project AP 6): This $5 million project provides for the relocation of Taxiway D 150 feet west to mitigate the direct access from the apron to the runway (in compliance with FAA AC 150/5300-13A).

9.2.1.2 Non–Master Plan Projects

As shown in Table 9-1, Non–Master Plan Projects are estimated to total approximately $51.7 million. These projects are scheduled for the short term; however, various phases of a project may extend into the intermediate term. These costs are associated with terminal, noise insulation program, planning study, security improvements, airfield, equipment, and landside projects. Key Non–Master Plan projects include the following:

- Terminal Improvements – Chillers (listed as project TE 1): The project includes the replacement of the existing chiller system that provides air conditioning to the ticketing, passenger screening, and bag makeup spaces of the terminal building.
- Restroom Renovation and Service Animal Relief Area (listed as project TE 2 and TE 5): This $1.9 million project includes the renovation of the existing departure hall including men's restroom renovation, new family restroom, new janitor's closet, new women's restroom, and the addition of a new Service Animal Relief Area (SARA). The project also includes the renovation of the adjacent departure hall associated with the restroom renovations and a new security delivery / exit vestibule expansion.
- Noise Insulation Program (Phases 1 through 8; listed as project NP 1-8): This $37.9 million project will consist of eight phases that will be completed throughout the short term and intermediate term.
- Customs Expansion (listed as project TE 3): This approximately $4.8 million project will be completed in the short term; it includes approximately 1,900 square feet of expansion to the facility and will include additional queuing, restroom facilities, a gym area, and a facility generator.
- Airport Buildings and Security Improvements (listed as project SI 1-6): This $2.2 million project will be completed in the short term and will include various future Airport building and security improvements.
- Essential Airport Equipment (listed as project EQ 1-6): This $2.6 million project includes the acquisition of essential equipment for the Airport including an ARFF vehicle and a new Airport beacon.
- Terminal Annex Modifications II and III / Customs Upgrades (listed as project TE 4): This approximately $2.2 million project will be completed in the short term.

9.2.2 CAPITAL IMPROVEMENT PROGRAM FUNDING PLAN

Airport development is often funded by a combination of public and private sources. Most airports similar in size to the Airport have a variety of available funding sources and mechanisms to fund capital projects. The funding plan presented herein does not represent a final plan of finance for the CIP projects. Additional actions are required prior to the use of some of these funding sources for specific projects. It was assumed that the costs of these projects will ultimately be funded by a combination of sources, such as federal AIP grants, state grants, PFC revenues, Airport funds, and proceeds from the issuance of Airport revenue bonds. **Table 9-2** presents the estimated funding sources for the CIP projects. Each potential funding source is described in the following subsections.

Table 9-2 (1 of 2): Capital Improvement Program Funding Sources

			ESTIMATED FUNDING SOURCES						
PROJECT ID [1/]	PROJECT DESCRIPTION	TOTAL COSTS [2/]	FAA ENTITLEMENTS	FAA DISCRETIONARY	FDOT GRANTS	PFC PAYGO	AIRPORT FUNDS	GARB	PFC BONDS
Master Plan Projects									
LS 1	Terminal Arrivals Curb Modifications	$1,400,000	$1,250,000	$-	$-	$-	$150,000	$-	$-
LS 2	New Access Road	$2,200,000	$-	$-	$-	$2,131,000	$69,000	$-	$-
TW 1	Taxiway A Rehabilitation, Geometry Improvements, and Lighting - Design	$610,000	$549,000	$-	$30,500	$-	$30,500	$-	$-
LS 3	Greyhound Bus Station	$110,000	$-	$-	$-	$-	$110,000	$-	$-
TW 2	Taxiway A Rehabilitation, Geometry Improvements, and Lighting - Construction	$6,500,000	$2,700,000	$3,150,000	$320,000	$330,000	$-	$-	$-
SF 1	Maintenance Building - Design and Construction	$460,000	$-	$-	$230,000	$-	$230,000	$-	$-
SF 2	Maintenance Building - Design and Construction	$1,300,000	$-	$-	$650,000	$-	$650,000	$-	$-
ED 1	Environmental Assessment - Taxiway A and Commercial Apron Extension	$750,000	$675,000	$-	$37,500	$30,000	$7,500	$-	$-
SF 3	Consolidated Maintenance Building - Construction	$930,000	$-	$-	$-	$-	$930,000	$-	$-
TW 3	Taxiway A Extension and Apron Expansion- Design and Permitting	$850,000	$765,000	$-	$42,500	$20,000	$22,500	$-	$-
TW 4	Taxiway A Extension and Apron Extension- Construction	$10,000,000	$1,935,000	$7,065,000	$500,000	$100,000	$400,000	$-	$-
AP 1	Commercial Apron Expansion - Design and Permitting	$850,000	$765,000	$-	$42,500	$30,000	$12,500	$-	$-
AP 2	Commercial Apron Expansion - Construction	$10,000,000	$2,700,000	$6,300,000	$500,000	$400,000	$100,000	$-	$-
LS 4	Public Parking Lot - Surface Lot - Design	$420,000	$-	$-	$-	$-	$420,000	$-	$-
ED 2	Environmental Documentation	$240,000	$-	$-	$-	$-	$240,000	$-	$-
LS 6	Security Screening Checkpoint Expansion	$1,930,000	$-	$-	$-	$-	$-	$1,930,000	$-
PS 7	Terminal Expansion and Renovation - Preliminary Design	$1,000,000	$-	$-	$-	$-	$-	$1,000,000	$-
LS 5	Public Parking Lot - Surface Lot - Construction	$3,100,000	$-	$-	$-	$-	$3,100,000	$-	$-
TE 5	Terminal Expansion and Renovation - Design	$2,000,000	$-	$-	$-	$-	$-	$2,000,000	$-
TE 7	Terminal Expansion and Renovation - Construction	$35,000,000	$-	$-	$-	$-	$-	$8,750,000	$26,250,000
ED 3	Environmental Assessment - Overflow Aircraft Parking Ramp Expansion (Phase 2)	$700,000	$665,000	$-	$-	$-	$35,000	$-	$-
AP 3	Overflow Aircraft Parking Ramp Expansion Phase 2 - Design	$1,100,000	$1,045,000	$-	$-	$-	$55,000	$-	$-
PS 8	Airport Master Plan Update	$1,400,000	$1,260,000	$-	$70,000	$-	$70,000	$-	$-
AP 4	Overflow Aircraft Parking Ramp Expansion Phase 2 - Construction	$11,000,000	$3,398,000	$-	$550,000	$-	$7,052,000	$-	$-
PS 9	Consolidate Rental Car Facilities	$-	$-	$-	$-	$-	$-	$-	$-
AP 6	Taxiway D Relocation	$5,080,000	$3,410,000	$-	$254,000	$-	$1,416,000	$-	$-
AP 7	Runway 27 Bypass Taxiway and Safety Improvements	$-	$-	$-	$-	$-	$-	$-	$-
	Total Master Plan Projects	**$98,930,000**	**$21,117,000**	**$16,515,000**	**$3,227,000**	**$3,041,000**	**$15,100,000**	**$13,680,000**	**$26,250,000**

Table 9-2 (2 of 2): Capital Improvement Program Funding Sources

			ESTIMATED FUNDING SOURCES						
PROJECT ID [1/]	PROJECT DESCRIPTION	TOTAL COSTS [2/]	FAA ENTITLEMENTS	FAA DISCRETIONARY	FDOT GRANTS	PFC PAYGO	AIRPORT FUNDS	GARB	PFC BONDS
Non-Master Plan Projects									
TE 1	Terminal Improvements - Chillers	$200,000	$-	$-	$-	$200,000	$-	$-	$-
TE 2	Terminal Restrooms and Pet Relief Design	$230,000	$-	$-	$-	$225,000	$5,000	$-	$-
NP 1	Noise Insulation Program - Phase 1	$6,100,000	$-	$4,531,048	$-	$610,000	$-	$958,952	$-
TE 3	Customs Expansion (Phase 3)	$4,780,000	$-	$-	$1,140,000	$-	$-	$3,640,000	$-
SI 1	Airport Buildings and Security Improvements	$460,000	$-	$-	$230,000	$-	$230,000	$-	$-
SI 2	Airport Buildings and Security Improvements	$500,000	$-	$-	$250,000	$-	$-	$250,000	$-
SI 3	Airport Buildings and Security Improvements	$300,000	$-	$-	$150,000	$-	$150,000	$-	$-
SI 4	Airport Buildings and Security Improvements	$300,000	$-	$-	$150,000	$-	$150,000	$-	$-
SI 5	Airport Buildings and Security Improvements	$300,000	$-	$-	$150,000	$-	$150,000	$-	$-
SI 6	Airport Buildings and Security Improvements	$300,000	$-	$-	$150,000	$-	$150,000	$-	$-
NP 2	Noise Insulation Program - Phase 2	$9,200,000	$-	$8,280,000	$-	$920,000	$-	$-	$-
EQ 1	Replace Existing Airport Beacon	$410,000	$-	$-	$-	$-	$410,000	$-	$-
EQ 2	Essential Airport Equipment	$200,000	$-	$-	$100,000	$-	$100,000	$-	$-
EQ 3	Essential Airport Equipment	$300,000	$-	$-	$150,000	$-	$150,000	$-	$-
EQ 4	Essential Airport Equipment	$350,000	$-	$-	$175,000	$-	$175,000	$-	$-
EQ 5	ARFF/Fire Support Equipment	$1,000,000	$-	$900,000	$50,000	$-	$50,000	$-	$-
EQ 6	Essential Airport Equipment	$300,000	$-	$-	$150,000	$-	$150,000	$-	$-
TE 4	Terminal Annex Modifications II & III/ Customs Upgrades (including EOC)	$2,170,000	$-	$-	$1,085,000	$-	$-	$1,085,000	$-
TE 5	Restroom Renovation and SARA	$1,700,000	$-	$-	$-	$-	$1,700,000	$-	$-
NP 3	Noise Insulation Program - Phase 3	$4,500,000	$1,575,000	$2,115,000	$-	$810,000	$-	$-	$-
NP 4	Noise Insulation Program - Phase 4	$4,500,000	$-	$4,050,000	$-	$410,000	$-	$40,000	$-
NP 5	Noise Insulation Program - Phase 5	$4,100,000	$-	$3,690,000	$-	$-	$-	$410,000	$-
NP 6	Noise Insulation Program - Phase 6	$3,900,000	$-	$3,510,000	$-	$-	$-	$390,000	$-
NP 7	Noise Insulation Program - Phase 7	$2,600,000	$-	$2,340,000	$-	$-	$-	$260,000	$-
NP 8	Noise Insulation Program - Phase 8	$3,000,000	$-	$2,700,000	$-	$-	$-	$300,000	$-
	Total Non-Master Plan Projects	**$51,700,000**	**$1,575,000**	**$32,116,048**	**$3,930,000**	**$3,175,000**	**$3,570,000**	**$7,333,952**	**$0**
	Total CIP	**$150,630,000**	**$22,692,000**	**$48,631,048**	**$7,157,000**	**$6,216,000**	**$18,670,000**	**$21,013,952**	**$26,250,000**

NOTES: FY ending September 30. Numbers may not add due to rounding.

1/ LS – Landside; TE – Terminal; TW – Taxiway; NP – Noise Insulation Program; SI – Security Improvements; PS – Planning Study; EQ – Equipment; ED – Environmental Documentation; AP – Apron; AF – Airfield; GA – General Aviation; EOC – Emergency Operations Center; SF – Support Facilities; FAA – Federal Aviation Administration; FDOT – Florida Department of Transportation; PFC – Passenger Facility Charge; GARB – General Airport Revenue Bond 2/ Costs estimated using 2018 U.S. dollars; they have been escalated at 3.0 percent annually for inflation. 3/PFC Bonds are assumed to be double-barrel bonds secured by both PFCs and Airport revenues.

2/ Costs developed using 2018 U.S. dollars and have been escalated at 3 percent annually for inflation.

SOURCE: Monroe County Department of Airports, March 2019.

9.2.2.1 Federal Grants

The Airport and Airway Improvement Act of 1982 authorizes funding of the federal AIP from the Airport and Airway Trust Fund for nationwide airport development, airport planning, and noise compatibility planning and programs. The Airport and Airway Trust Fund is funded through user taxes on airfares, air freight, and aviation fuel.

On February 15, 2012, President Obama signed into law the FAA Modernization and Reform Act of 2012, which reauthorized FAA AIP funding for airport projects. Under this reauthorization, the AIP was extended for 4 federal fiscal years (FFY), through September 30, 2015. The authorized funding levels for AIP investment were established at approximately $3.35 billion each year. The FAA Extension, Safety, and Security Act of 2016, enacted on July 15, 2016, extended the authority and provided funding at current levels through the end of FFY 2017. The Disaster Tax Relief and Airport and Airway Extension Act of 2017, a subsequent 6-month extension, expired at the end of March 2018. Reauthorization of FAA AIP funding through FFY 2018, is included in The Consolidated Appropriations Act, 2018 (the Act), the omnibus spending bill enacted on March 23, 2018. The Act authorizes funding from the Airport and Airways Trust Fund for AIP grants-in-aid in the total amount of $3.35 billion for FFY 2018. The five-year FAA reauthorization has been passed by Congress and the legislation was sent to President Trump on October 3, 2018 for his signature. For purposes of this analysis, it was assumed that the AIP would continue to be funded throughout the Planning Period at a level of at least $3.35 billion per year.

The FAA distributes grants under the AIP to airport operators in two ways: entitlement grants and discretionary grants. Entitlement grants are distributed based on the number of enplaned passengers served at airports on an annual basis. Discretionary grants are distributed for individual projects based on funding availability and the priority of projects at airports nationwide. AIP grants may be used to fund eligible land acquisition, noise mitigation, airfield improvements, airport roadways, and safety and security systems and equipment. Generally, only those projects that do not generate revenues are eligible for AIP grant funding.

AIP grant eligibility is assumed to be 90 to 95 percent for eligible projects at non-hub airports, such as the Airport. Entitlement grants available to the Airport in any given year are established by a formula set forth in the FAA AIP Handbook.[1] Entitlement grants for the Airport were projected based on the following AIP formula using the enplaned passenger forecasts developed for the financial analysis of this MPU:

- $15.60 for each of the first 50,000 enplaned passengers
- $10.40 for each of the next 50,000 enplaned passengers
- $5.20 for each of the next 400,000 enplaned passengers
- $1.30 for each of the next 500,000 enplaned passengers
- $1.00 for each enplaned passenger beyond 1.0 million enplaned passengers

[1] Federal Aviation Administration, Order 5100.38D, *Airport Improvement Program Handbook*, September 30, 2014.

For a given year, the entitlement formula is based on the numbers of enplaned passengers from two years prior. For example, when calculating entitlement grants for CY 2018, the formula applies to numbers of enplaned passengers in CY 2016. **Table 9-3** presents the annual AIP entitlement grants available to fund CIP projects at the Airport through CY 2035.

Table 9-3: Projected Airport Improvement Program Entitlement Grants

	FORECAST ENPLANED PASSENGERS		
FISCAL YEAR	**FISCAL YEAR**	**ENPLANED PASSENGERS**	**TOTAL AIP ENTITLEMENT GRANTS**
2018	2016	378,889	$2,750,000
2019	2017	413,608	$2,931,000
2020	2018	409,741	$2,911,000
2021	2019	420,311	$2,966,000
2022	2020	430,941	$3,021,000
2023	2021	441,535	$3,076,000
2024	2022	452,120	$3,318,000
2025	2023	462,628	$3,331,000
2026	2024	473,026	$3,345,000
2027	2025	483,393	$3,358,000
2028	2026	493,627	$3,372,000
2029	2027	503,682	$3,385,000
2030	2028	513,594	$3,398,000
2031	2029	523,389	$3,410,000
2032	2030	533,026	$3,423,000
2033	2031	542,373	$3,435,000
2034	2032	551,562	$3,447,000
2035	2033	560,643	$3,459,000
Total AIP Entitlement Grants (CY 2018 – CY 2035)			**$58,336,000**

NOTES: Numbers may not add due to rounding.

AIP – Airport Improvement Program

SOURCE: Monroe County Department of Airports, March 2019.

As shown in Table 9-3, approximately $58.3 million of AIP entitlement grants are projected to be available for funding eligible CIP projects through CY 2035. Based on project eligibility, Table 9-2 shows the estimated uses of these projected available funds for the CIP projects, which is approximately $22.7 million through FY 2035.

Discretionary grants (annual and multiyear commitments through an FAA Letter of Intent [LOI]) are distributed by each FAA region based on availability and project priorities. Discretionary grants are generally made immediately available to fund project costs, while LOI grants are distributed to an airport sponsor over several years at defined annual funding levels. The County has received an average of $4.0 million in discretionary funding over the past five years for projects at the Airport. As shown in Table 9-2, approximately $48.6 million of AIP discretionary funds were assumed to be available to fund eligible CIP projects.

9.2.2.2 State Grants

Many states have programs to assist in airport capital development. FDOT Grants are funded from the State Transportation Trust Fund, which consists, in part, of funds collected through the state's aviation fuel tax. FDOT Grants supplement the AIP, providing a portion of the sponsor's matching share when federal funding is available and up to 80 percent of the overall project cost when it is not. The State of Florida frequently distributes funding awarded via FDOT Grants in a multiyear period for grant-approved projects. However, the availability of such funds in any given year is not guaranteed.

The Airport has historically received funds from FDOT. The County has received an average of approximately $1.5 million annually in FDOT Grants over the past five years to fund eligible projects at the Airport. As shown in Table 9-2, approximately $7.2 million of FDOT Grants were assumed to be available to fund eligible CIP projects.

9.2.2.3 Passenger Facility Charge Revenues

Since 1991, the collection of a PFC at the nation's airports has been authorized under Title 14 of the Code of Federal Regulations, Part 158, and the PFC Program has been administered by the FAA. PFCs are collected from qualified passengers to fund eligible airport projects. Since April 1, 2001, a PFC of up to $4.50 per qualified enplaned passenger can be imposed by a U.S. airport operator. In 1994, the County received approval from the FAA to impose a PFC at the Airport. Currently, the County collects a $4.50 PFC (less $0.11 airline collection fee) from qualified enplaned passengers at the Airport.

PFC revenues may be used on a pay-as-you-go (PAYGO) basis or leveraged to pay debt service on bonds or other debt used to pay for PFC-eligible projects. Because airport sponsors may use PFC revenues for the local matching share of AIP grants, PFCs can help sponsors implement AIP-financed projects sooner than they would be able to do otherwise. Although the FAA is required to approve the collection of a PFC and the use of PFC revenues, the PFC Program permits local collection of PFC revenues through the airlines operating at airports, and it provides more flexibility to airport sponsors than the AIP funding. PFCs may be used for any AIP-eligible project; although, PFC eligibility is generally broader than AIP eligibility.

The FAA has approved PFC applications (and subsequent amendments) for the Airport, with a combined authority for the County to impose and use approximately $30.0 million of PFC revenues to fund completed and future improvements at the Airport. As of December 31, 2018, the County has yet to collect approximately $10.7 million of this PFC authority. For purposes of this financial analysis, it was assumed that the County will continue to apply for, collect, and use PFCs at a level of $4.50 per qualified enplaned passenger throughout the Planning Period.

Table 9-4 shows the projected PFC revenues based on the enplaned passenger forecasts. As shown, outstanding PFC authority is approximately $10.7 million for projects included in existing PFC applications. All remaining PFC revenues are available for use on CIP projects. A total of approximately $6.2 million of future CIP projects were assumed to be funded on a PAYGO basis. In addition, PFC revenues were assumed to be used to pay debt service on bonds for certain PFC-eligible projects. (See Section 9.2.2.5 for more information on this funding source.) As shown in Table 9-4, the PFC balance is adequate to fund existing and future projects through both PAYGO and PFC bond proceeds through FY 2035.

Table 9-4: Projected Passenger Facility Charge Revenues

	ESTIMATED 2018	PROJECTED 2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
PFC Revenues																		
Enplaned Passengers	409,741	420,311	430,941	441,535	452,120	462,628	473,026	483,393	493,627	503,682	513,594	523,389	533,026	542,373	551,562	560,643	569,620	578,497
Percent PFC Eligible Enplanements	75.00%	75.00%	75.00%	75.00%	75.00%	75.00%	75.00%	75.00%	75.00%	75.00%	75.00%	75.00%	75.00%	75.00%	75.00%	75.00%	75.00%	75.00%
PFC Eligible Enplanements	307,306	315,233	323,206	331,152	339,090	346,971	354,769	362,544	370,220	377,761	385,195	392,542	399,769	406,780	413,672	420,482	427,215	433,873
PFC Administrative Fee	$0.11	$0.11	$0.11	$0.11	$0.11	$0.11	$0.11	$0.11	$0.11	$0.11	$0.11	$0.11	$0.11	$0.11	$0.11	$0.11	$0.11	$0.11
PFC Amount Remitted Per Enplaned Passenger	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39
Total PFC Fee Per Enplaned Passenger	$4.50	$4.50	$4.50	$4.50	$4.50	$4.50	$4.50	$4.50	$4.50	$4.50	$4.50	$4.50	$4.50	$4.50	$4.50	$4.50	$4.50	$4.50
Total PFC Collections	**$1,349,073**	**$1,383,873**	**$1,418,874**	**$1,453,755**	**$1,488,606**	**$1,523,204**	**$1,557,437**	**$1,591,570**	**$1,625,268**	**$1,658,372**	**$1,691,007**	**$1,723,258**	**$1,754,987**	**$1,785,764**	**$1,816,018**	**$1,845,916**	**$1,875,473**	**$1,904,700**
PFC Cash Flow																		
Beginning Balance	$6,924,885	$6,553,397	$6,213,737	$5,906,360	$5,631,407	$5,389,104	$1,980,262	$1,674,343	$1,400,110	$1,157,381	$945,814	$765,189	$615,372	$496,083	$406,618	$346,691	$316,183	$314,988
Deposit: PFC Revenue Collected	$1,349,073	$1,383,873	$1,418,874	$1,453,755	$1,488,606	$1,523,204	$1,557,437	$1,591,570	$1,625,268	$1,658,372	$1,691,007	$1,723,258	$1,754,987	$1,785,764	$1,816,018	$1,845,916	$1,875,473	$1,904,700
Deposit: PFC Interest Income (0.8%)	$55,399	$52,427	$49,710	$47,251	$45,051	$43,113	$15,842	$13,395	$11,201	$9,259	$7,567	$6,122	$4,923	$3,969	$3,253	$2,774	$2,529	$2,520
Transfer: Locally Paid Projects to be Reimbursed with PFCs [1/]	$-	$360,000	$20,000	$540,000	$400,000	$(1,320,000)	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Less: Existing PAYGO [2/]	$(1,775,960)	$(1,775,960)	$(1,775,960)	$(1,775,960)	$(1,775,960)	$(1,775,960)	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Less: Future PAYGO (Master Plan Projects)	$-	$(360,000)	$(20,000)	$(130,000)	$(400,000)	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Less: Future PAYGO (Non-Master Plan Projects)	$-	$-	$-	$(410,000)	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Less: PFC Applied to Debt Service (Master Plan Projects)	$-	$-	$-	$-	$-	$(1,879,198)	$(1,879,198)	$(1,879,198)	$(1,879,198)	$(1,879,198)	$(1,879,198)	$(1,879,198)	$(1,879,198)	$(1,879,198)	$(1,879,198)	$(1,879,198)	$(1,879,198)	$(1,879,198)
Ending Balance	$6,553,397	$6,213,737	$5,906,360	$5,631,407	$5,389,104	$1,980,262	$1,674,343	$1,400,110	$1,157,381	$945,814	$765,189	$615,372	$496,083	$406,618	$346,691	$316,183	$314,988	$343,010

NOTES: FY ending September 30. Numbers may not add due to rounding.

PFC – Passenger Facility Charge

1/ Master Plan and Non-Master Plan projects initially funded with local funds that will be reimbursed with PFCs.

2/ Remaining authority of $10,655,761 on existing PFC applications per the SOAR quarterly report as of December 31, 2018. Charge expiration date is estimated to be July 1, 2023 based on FAA approval of PFC No. 18-17-C-00-EYW.

SOURCE: Monroe County Department of Airports, March 2019.

9.2.2.4 Airport Funds

Revenues remaining after the payment of O&M expenses, outstanding debt service, and transfers to other accounts, as applicable, are deposited into the County's Airport Reserve Fund. Revenues in this fund may be used to fund capital improvement projects at the Airport. For purposes of this analysis, revenues available in the Airport Reserve Fund are identified as Airport funds and are essentially treated as cash.

As shown in Table 9-2, CIP project costs totaling approximately $18.7 million were assumed to be funded with Airport funds through the Planning Period. These funds are primarily to be used to pay remaining costs of projects after maximizing the use of AIP grants, state grants, and PFC revenues.

Airport funds expended on capital improvement projects are amortized and included in the airline rate base, as applicable.[2] **Table 9-5** presents projected amortization for CIP projects (Master Plan and Non–Master Plan Projects) by cost center based on the assumed use of Airport funds through FY 2035. Existing and future capital program amortization associated with the Airport's cash expenditures were included in addition to the amortization associated with the CIP.

Amortization is a function of the cost of the project, the expected useful life of the project, and an amortization rate. Regarding useful life, CIP projects were assumed to have a useful life of either 10, 15, or 20 years, depending upon the type of project (e.g., facility, equipment, vehicle). An amortization rate of 3.0 percent was used for the duration of this funding plan. Specific Future Non-Master Plan Projects have not been identified from FY 2024 through FY 2035, however, it is reasonable to assume the County will undertake projects in those years. Therefore, amortization for Future Non-Master Plan Projects in those years has been calculated and allocated to cost centers based on a 5-year average of Non-Master Plan Projects included in the CIP projects.

9.2.2.5 Revenue Bond Proceeds

For purposes of this financial analysis and funding plan, proceeds from the issuance of General Airport Revenue Bonds (GARBs) and PFC Bonds were assumed to fund certain projects included in the CIP. As shown in Table 9-2, approximately $21.0 million of CIP project costs are assumed to be funded with GARBs, and approximately $26.3 million of CIP project costs are assumed to be funded with PFC Bonds. **Table 9-6** presents projected future debt service for GARBS and PFC Bonds by cost center through FY 2035. As shown, the Airport has no existing outstanding debt service.

Future GARB debt service associated with the CIP projects was assumed for one series of GARBs; it was calculated based on an assumed interest rate of 5.0 percent, capitalized interest of 2 years, and a bond term of 30 years. The resulting annual debt service is approximately $1.7 million beginning in FY 2025 for the proposed Series 2023 Bonds.

Future PFC debt service associated with the CIP projects was assumed for one series of PFC Bonds and was calculated based on an assumed interest rate of 5.0 percent and a bond term of 30 years. The resulting annual debt service to be paid with PFC revenues is approximately $1.9 million beginning in FY 2023 for the proposed Series 2023 Bonds.[3]

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[2] Amortization charges are the annual amount to recover capital expenditures that are paid for with Airport funds exceeding $1,000. Amortization charges are calculated based on the expected useful life of the capital expenditure, and they will include a reasonable rate of return.

[3] PFC Bonds are assumed to be double-barrel bonds secured by both PFCs and Airport revenues.

Table 9-5: Projected Amortization by Cost Center

	ESTIMATED 2018	PROJECTED 2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Existing Amortization Charges by Cost Center 1/																		
Terminal	$27,167	$20,890	$17,366	$14,494	$10,568	$5,236	$5,236	$5,236	$5,236	$5,236	$-	$-	$-	$-	$-	$-	$-	$-
Airfield	$14,039	$12,953	$9,428	$7,992	$7,253	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
General Aviation	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Other	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Total Existing Amortization Charges	**$41,206**	**$33,843**	**$26,794**	**$22,486**	**$17,821**	**$5,236**	**$5,236**	**$5,236**	**$5,236**	**$5,236**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
Master Plan Projects Amortization Charges by Cost Center 1/																		
Terminal	$-	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$-	$-
Airfield	$-	$9,095	$10,066	$11,872	$44,972	$52,996	$52,996	$52,996	$52,996	$52,996	$52,996	$57,529	$60,971	$626,842	$740,465	$740,465	$733,817	$733,817
General Aviation	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Other	$-	$-	$26,261	$78,418	$153,044	$153,044	$153,044	$213,925	$462,677	$462,677	$462,677	$462,677	$469,421	$469,421	$469,421	$469,421	$469,421	$438,340
Total Master Plan Amortization Charges	**$-**	**$23,546**	**$50,778**	**$104,741**	**$212,467**	**$220,491**	**$220,491**	**$281,372**	**$530,124**	**$530,124**	**$530,124**	**$534,657**	**$544,843**	**$1,110,714**	**$1,224,337**	**$1,224,337**	**$1,203,238**	**$1,172,157**
Non-Master Plan Projects Amortization Charges by Cost Center 1/																		
Terminal	$-	$18,857	$182,639	$194,675	$206,712	$218,748	$230,784	$230,784	$230,784	$230,784	$230,784	$230,784	$230,784	$230,784	$230,784	$230,784	$230,784	$67,003
Airfield	$-	$-	$-	$-	$-	$22,663	$22,663	$22,663	$22,663	$22,663	$22,663	$22,663	$22,663	$22,663	$22,663	$22,663	$-	$-
General Aviation	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Other	$-	$-	$39,500	$52,451	$71,876	$78,352	$97,777	$97,777	$97,777	$97,777	$97,777	$97,777	$97,777	$84,827	$65,401	$58,926	$39,500	$-
Total Non-Master Plan Amortization Charges	**$-**	**$18,857**	**$222,139**	**$247,126**	**$278,588**	**$319,763**	**$351,225**	**$351,225**	**$351,225**	**$351,225**	**$351,225**	**$351,225**	**$351,225**	**$338,275**	**$318,849**	**$289,710**	**$270,285**	**$67,003**
Future Capital Program Amortization Charges by Cost Center 1/ 2/																		
Terminal	$-	$-	$-	$-	$-	$-	$-	$146,904	$298,215	$454,066	$614,592	$779,934	$950,236	$1,125,647	$1,306,321	$1,492,415	$1,684,091	$1,734,614
Airfield	$-	$-	$-	$-	$-	$-	$-	$4,052	$8,226	$12,525	$16,952	$21,513	$26,211	$31,049	$36,033	$41,166	$46,453	$47,846
General Aviation	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Other	$-	$-	$-	$-	$-	$-	$-	$43,301	$87,900	$133,838	$181,154	$229,889	$280,086	$331,789	$385,044	$439,896	$496,393	$511,285
Total Future Amortization Charges	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$194,257**	**$394,341**	**$600,429**	**$812,698**	**$1,031,336**	**$1,256,533**	**$1,488,486**	**$1,727,397**	**$1,973,476**	**$2,226,937**	**$2,293,745**
Total Amortization Charges	**$-**	**$42,403**	**$272,917**	**$351,867**	**$491,055**	**$540,254**	**$571,716**	**$826,854**	**$1,275,691**	**$1,481,778**	**$1,694,048**	**$1,917,218**	**$2,152,601**	**$2,937,474**	**$3,270,584**	**$3,487,524**	**$3,700,460**	**$3,532,905**

NOTES: FY ending September 30. Numbers may not add due to rounding.

1/ Projects shown to be amortized are $5,000 or more funded with local funds.

2/ Project costs and allocation to cost centers based on 5-year average of Non-Master Plan projects amortization charges.

SOURCE: Monroe County Department of Airports, March 2019.

Table 9-6: Projected Debt Service

	ESTIMATED 2018	PROJECTED 2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
GARB Debt Service																		
Proposed Series 2023 GARB 1/	$-	$-	$-	$-	$-	$-	$-	$1,743,314	$1,743,314	$1,743,314	$1,743,314	$1,743,314	$1,743,314	$1,743,314	$1,743,314	$1,743,314	$1,743,314	$1,743,314
Total Non-PFC Supported Debt Service	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**
PFC Supported Debt Service																		
Proposed Series 2023 PFC Bonds	$-	$-	$-	$-	$-	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198
Total PFC Supported Debt Service	**$-**	**$-**	**$-**	**$-**	**$-**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**
Total Debt Service	**$-**	**$-**	**$-**	**$-**	**$-**	**$1,879,198**	**$1,879,198**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**
DEBT SERVICE AFTER ALLOCATION TO COST CENTERS																		
Total Debt Service by Cost Center																		
Terminal	$-	$-	$-	$-	$-	$1,879,198	$1,879,198	$3,426,813	$3,426,813	$3,426,813	$3,426,813	$3,426,813	$3,426,813	$3,426,813	$3,426,813	$3,426,813	$3,426,813	$3,426,813
Airfield	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
General Aviation	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Other	$-	$-	$-	$-	$-	$-	$-	$195,698	$195,698	$195,698	$195,698	$195,698	$195,698	$195,698	$195,698	$195,698	$195,698	$195,698
Total Debt Service Net of PFC Debt Service	**$-**	**$-**	**$-**	**$-**	**$-**	**$1,879,198**	**$1,879,198**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**	**$3,622,512**
PFC Supported Debt Service by Cost Center																		
Terminal	$-	$-	$-	$-	$-	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198
Airfield	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
General Aviation	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Other	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Total PFC Supported Debt Service	**$-**	**$-**	**$-**	**$-**	**$-**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**	**$1,879,198**
Debt Service Net of PFC Debt Service by Cost Center																		
Terminal	$-	$-	$-	$-	$-	$-	$-	$1,547,615	$1,547,615	$1,547,615	$1,547,615	$1,547,615	$1,547,615	$1,547,615	$1,547,615	$1,547,615	$1,547,615	$1,547,615
Airfield	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
General Aviation	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Other	$-	$-	$-	$-	$-	$-	$-	$195,698	$195,698	$195,698	$195,698	$195,698	$195,698	$195,698	$195,698	$195,698	$195,698	$195,698
Total Debt Service	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**	**$1,743,314**

NOTES: FY ending September 30. Numbers may not add due to rounding.

GARB – General Airport Revenue Bond

PFC – Passenger Facility Charge

1/ Assumes two years of capitalized interest.

SOURCE: Monroe County Department of Airports, March 2019.

9.3 Operating and Maintenance Expenses

O&M expenses for the Airport include the County's costs for the operation, maintenance, and repair of the Airport, which include salaries and employee benefits, utility costs, ordinary maintenance, administrative and general expenses, and security expenses for contractual services. For purposes of calculating airline rates and charges, O&M expenses are categorized into cost centers.

Projections of future O&M and security expenses were developed based on a review of historical/budget data, the effects of inflation, and the forecast growth in numbers of aircraft operations and enplaned passengers at the Airport. In addition, it is expected that, as certain CIP projects are completed, associated O&M and security expenses could change accordingly. For example, construction of new facilities may increase future O&M expenses, while reconstructed pavement may require less maintenance, thereby reducing future O&M expenses. Therefore, the anticipated implementation of certain terminal CIP projects were assumed to have an impact on future O&M and security expenses. Because of these CIP projects, total O&M expenses are projected to increase by an additional $6.3 million in total during the Planning Period.

Table 9-7 presents projections of O&M and security expenses for the Airport by functional area. O&M and security expenses for estimated FY 2018 are also included. As shown, total O&M and security expenses for the Airport are projected to increase from approximately $7.6 million in FY 2018 to approximately $19.7 million in FY 2035, reflecting a CAGR of 5.8 percent.

9.4 Airport Revenues – Non-Airline and Airline

9.4.1 NON-AIRLINE REVENUES

Non-airline revenues include those revenues obtained from sources other than airline rentals, fees, and charges for operating at the Airport. Projections of future non-airline revenues were developed based on a review of historical/budget data, the effects of inflation, the forecast growth in numbers of aircraft operations and enplaned passengers at the Airport, and the anticipated increases in revenue from implementation of certain CIP projects. The anticipated implementation of certain terminal, parking, and airfield CIP projects were assumed to have an impact on future non-airline revenues. Because of these CIP projects, total non-airline revenues are projected to increase by an additional $13.0 million during the Planning Period.

Table 9-7: Projected Operating and Maintenance and Security Expenses

	ESTIMATED	PROJECTED																
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Personnel Services																		
Administrative	$549,457	$582,424	$617,370	$654,412	$693,677	$735,297	$779,415	$826,180	$875,751	$928,296	$983,994	$1,043,033	$1,105,615	$1,171,952	$1,242,270	$1,316,806	$1,395,814	$1,479,563
Maintenance	$664,218	$704,071	$746,315	$791,094	$838,560	$888,874	$942,206	$998,738	$1,058,663	$1,122,182	$1,189,513	$1,260,884	$1,336,537	$1,416,729	$1,501,733	$1,591,837	$1,687,347	$1,788,588
Planning & Engineering	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
ARFF	$1,297,351	$1,375,192	$1,457,704	$1,545,166	$1,637,876	$1,736,148	$1,840,317	$1,950,736	$2,067,780	$2,191,847	$2,323,358	$2,462,760	$2,610,525	$2,767,157	$2,933,186	$3,109,177	$3,295,728	$3,493,471
Airport Security	$235,538	$249,670	$264,650	$280,530	$297,361	$401,438	$425,524	$451,055	$478,119	$506,806	$537,214	$569,447	$603,614	$639,831	$678,221	$718,914	$762,049	$807,772
Legal	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Total Personnel Services	**$2,746,564**	**$2,911,358**	**$3,086,039**	**$3,271,202**	**$3,467,474**	**$3,761,757**	**$3,987,462**	**$4,226,710**	**$4,480,313**	**$4,749,132**	**$5,034,079**	**$5,336,124**	**$5,656,292**	**$5,995,669**	**$6,355,409**	**$6,736,734**	**$7,140,938**	**$7,569,394**
Contractual Services																		
Professional Services	$18,000	$18,637	$19,297	$19,979	$20,687	$21,419	$22,177	$22,961	$23,774	$24,615	$25,487	$26,388	$27,322	$28,289	$29,290	$30,327	$31,400	$32,512
Other Contractual Services	$691,411	$744,510	$801,686	$863,254	$929,550	$1,000,937	$1,077,807	$1,160,580	$1,249,710	$1,345,684	$1,449,030	$1,560,312	$1,680,140	$1,809,171	$1,948,111	$2,097,722	$2,258,822	$2,432,294
Phone & Postage/Freight	$37,400	$40,018	$42,819	$45,817	$49,024	$52,455	$56,127	$60,056	$64,260	$68,758	$73,571	$78,721	$84,232	$90,128	$96,437	$103,188	$110,411	$118,140
Utility Services	$460,000	$487,600	$516,856	$547,867	$580,739	$864,117	$915,965	$970,922	$1,029,178	$1,090,928	$1,156,384	$1,225,767	$1,299,313	$1,377,272	$1,459,908	$1,547,503	$1,640,353	$1,738,774
Rentals & Leases	$9,000	$9,420	$9,860	$10,321	$10,803	$11,307	$11,835	$12,388	$12,966	$13,572	$14,205	$14,869	$15,563	$16,290	$17,051	$17,847	$18,680	$19,553
Insurance	$21,000	$21,182	$21,365	$21,549	$21,736	$21,923	$22,113	$22,304	$22,497	$22,691	$22,887	$23,085	$23,285	$23,486	$23,689	$23,894	$24,100	$24,309
Risk Management Charges	$33,198	$34,295	$35,428	$36,598	$37,808	$39,057	$40,347	$41,680	$43,057	$44,480	$45,949	$47,467	$49,036	$50,656	$52,329	$54,058	$55,844	$57,689
Advertising	$1,272	$1,336	$1,402	$1,472	$1,546	$1,623	$1,705	$1,790	$1,879	$1,973	$2,072	$2,176	$2,284	$2,399	$2,518	$2,644	$2,777	$2,915
Total Contractual Services	**$1,271,281**	**$1,356,997**	**$1,448,713**	**$1,546,858**	**$1,651,891**	**$2,012,839**	**$2,148,075**	**$2,292,682**	**$2,447,321**	**$2,612,703**	**$2,789,586**	**$2,978,786**	**$3,181,176**	**$3,397,691**	**$3,629,335**	**$3,877,183**	**$4,142,387**	**$4,426,185**
Supplies & Materials																		
Promotional	$5,000	$5,100	$5,202	$5,306	$5,412	$5,520	$5,631	$5,743	$5,858	$5,975	$6,095	$6,217	$6,341	$6,468	$6,597	$6,729	$6,864	$7,001
Office Supplies	$500	$510	$520	$531	$541	$552	$563	$574	$586	$598	$609	$622	$634	$647	$660	$673	$686	$700
Operating Supplies	$179,500	$192,065	$205,510	$219,895	$235,288	$251,758	$269,381	$288,238	$308,414	$330,003	$353,104	$377,821	$404,268	$432,567	$462,847	$495,246	$529,913	$567,007
Internal Fuel	$7,000	$7,350	$7,718	$8,103	$8,509	$8,934	$9,381	$9,850	$10,342	$10,859	$11,402	$11,972	$12,571	$13,200	$13,860	$14,552	$15,280	$16,044
Software	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Books, Pubs, Subs, Educ, Mem	$22,500	$22,950	$23,409	$23,877	$24,355	$24,842	$25,339	$25,845	$26,362	$26,890	$27,427	$27,976	$28,535	$29,106	$29,688	$30,282	$30,888	$31,505
Total Supplies & Materials	**$214,500**	**$227,975**	**$242,358**	**$257,712**	**$274,105**	**$291,606**	**$310,294**	**$330,251**	**$351,563**	**$374,325**	**$398,638**	**$424,608**	**$452,350**	**$481,988**	**$513,652**	**$547,483**	**$583,632**	**$622,258**
General																		
County Overhead Allocation	$331,280	$354,470	$379,282	$405,832	$434,241	$464,637	$497,162	$531,963	$569,201	$609,045	$651,678	$697,295	$746,106	$798,333	$854,217	$914,012	$977,993	$1,046,452
Travel & Per Diem	$13,500	$14,239	$15,018	$15,839	$16,706	$17,620	$18,584	$19,600	$20,673	$21,803	$22,996	$24,254	$25,581	$26,981	$28,457	$30,014	$31,656	$33,388
Vehicle Maintenance	$17,876	$18,761	$19,689	$20,664	$21,686	$22,760	$23,886	$25,068	$26,309	$27,611	$28,977	$30,411	$31,916	$33,496	$35,154	$36,893	$38,719	$40,636
Repairs and Maintenance [1/]	$318,216	$319,377	$320,543	$321,713	$322,887	$324,066	$325,248	$326,436	$327,627	$328,823	$330,023	$331,227	$332,436	$333,650	$334,867	$336,090	$337,316	$338,547
Repairs and Maintenance - Building	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Printing and Binding	$2,300	$2,392	$2,488	$2,587	$2,691	$2,798	$2,910	$3,027	$3,148	$3,274	$3,405	$3,541	$3,682	$3,830	$3,983	$4,142	$4,308	$4,480
Miscellaneous Expenses	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Total General	**$683,372**	**$709,438**	**$737,220**	**$766,835**	**$798,410**	**$832,080**	**$867,990**	**$906,294**	**$947,157**	**$990,755**	**$1,037,279**	**$1,086,929**	**$1,139,922**	**$1,196,490**	**$1,256,878**	**$1,321,351**	**$1,390,192**	**$1,463,703**
ARFF Non-Personnel Services	$192,548	$206,026	$220,448	$235,880	$252,391	$270,059	$288,963	$309,190	$330,833	$353,992	$378,771	$405,285	$433,655	$464,011	$496,492	$531,246	$568,433	$608,224
Security Non-Personnel Services	$95,617	$102,310	$109,472	$117,135	$125,334	$134,108	$143,495	$153,540	$164,288	$175,788	$188,093	$201,260	$215,348	$230,422	$246,552	$263,810	$282,277	$302,036
Total O&M Expenses	**5,203,882**	**5,514,105**	**5,844,251**	**6,195,622**	**6,569,606**	**7,302,449**	**7,746,280**	**8,218,666**	**8,721,475**	**9,256,694**	**9,826,446**	**10,432,992**	**11,078,743**	**11,766,270**	**12,498,317**	**13,277,807**	**14,107,859**	**14,991,801**
Contractual Services - Security																		
Security Services - MCSO	$2,427,159	$2,525,234	$2,627,271	$2,733,431	$2,843,882	$2,958,795	$3,078,351	$3,202,738	$3,332,152	$3,466,795	$3,606,878	$3,752,621	$3,904,254	$4,062,014	$4,226,148	$4,396,915	$4,574,581	$4,759,427
Security Services - M&O	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Less FDOT/TSA Security Grants	$(58,395)	$(58,395)	$(58,395)	$(58,395)	$(58,395)	$(58,395)	$(58,395)	$(58,395)	$(58,395)	$(58,395)	$(58,395)	$(58,395)	$(58,395)	$(58,395)	$(58,395)	$(58,395)	$(58,395)	$(58,395)
Total Contractual Service - Security	**$2,368,764**	**$2,466,839**	**$2,568,876**	**$2,675,036**	**$2,785,487**	**$2,900,400**	**$3,019,956**	**$3,144,343**	**$3,273,757**	**$3,408,400**	**$3,548,483**	**$3,694,226**	**$3,845,859**	**$4,003,619**	**$4,167,753**	**$4,338,520**	**$4,516,186**	**$4,701,032**
Total O&M Expenses & Security Expense	**7,572,646**	**7,980,943**	**8,413,127**	**8,870,658**	**9,355,092**	**10,202,849**	**10,766,236**	**11,363,010**	**11,995,232**	**12,665,094**	**13,374,929**	**14,127,218**	**14,924,602**	**15,769,889**	**16,666,070**	**17,616,326**	**18,624,045**	**19,692,833**

NOTES: FY ending September 30. Numbers may not add due to rounding.

O&M – Operating and Maintenance, FDOT – Florida Department of Transportation, TSA – Transportation Security Administration

1/ Includes capital expenses.

SOURCE: Monroe County Department of Airports, March 2019.

Projections for all non-airline revenue categories were based on estimated FY 2018 financial data. **Table 9-8** presents projected non-airline revenues for the Airport. Total non-airline revenues are projected to increase from approximately $3.6 million in FY 2018 to approximately $10.0 million in FY 2035, reflecting a CAGR of 6.2 percent.

9.4.2 AIRLINE REVENUES

The remaining revenues generated at the Airport include terminal rentals and landing fees, which are payable by the airlines operating at the Airport. This section summarizes the calculation of airline rates and charges for terminal rentals and landing fees, as calculated by the County in consultation with the airlines serving the Airport and established by County ordinance annually.

9.4.2.1 Terminal Rental Rates

The terminal rental rate calculation combines terminal cost center–specific O&M expenses, net contractual services for security, debt service, amortization charges, and non-amortized capital expenditures; less: credits for the departure lounge restroom. This net terminal requirement is broken out by the terminal basic O&M and capital requirement and the security component of the terminal requirement and then divided by the terminal building rentable square feet for each respective area to calculate the two terminal rental rates. The terminal rental rate for basic O&M and capital and the terminal rental rate for security are summed together to determine the average terminal rental rate.

Table 9-9 presents projected terminal rental rates and revenue at the Airport through FY 2035. As shown, the average terminal rental rate is projected to increase from $58.17 per square foot in FY 2018 to $168.36 per square foot in FY 2035. Total terminal rental revenues, as shown as Airline Requirement Occupied, are projected to increase from approximately $2.1 million in FY 2018 to approximately $7.5 million in FY 2035, reflecting a CAGR of 7.8 percent.

9.4.2.2 Landing Fee Rate

The landing fee calculation combines airfield cost center–specific O&M expenses, net contractual services for security, debt service, amortization charges, and non-amortized capital expenditures; less: GA revenues. This net airfield requirement is divided by total landed weight to determine the landing fee rate.

Table 9-10 presents projected landing fee rates and revenues at the Airport through FY 2035. As shown, the landing fee rate is projected to increase from $3.78 per 1,000-pound units of landed weight in FY 2018 to $8.83 per 1,000-pound units of landed weight in FY 2035. Total landing fee revenues are projected to increase from approximately $1.9 million in FY 2018 to approximately $6.1 million in FY 2035, reflecting a CAGR of 7.1 percent.

Table 9-8: Projected Non-Airline Revenues

	ESTIMATED 2018	PROJECTED 2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Charges for Services																		
Airport Parking Revenues	$84,000	$86,520	$89,116	$91,789	$94,543	$97,379	$100,300	$203,610	$209,718	$216,010	$222,490	$229,165	$236,040	$243,121	$250,414	$257,927	$265,665	$273,635
Airport Security Revenues	$1,350,000	$1,426,232	$1,506,768	$1,591,852	$1,681,741	$1,776,705	$1,877,032	$1,983,024	$2,095,002	$2,213,302	$2,338,283	$2,470,321	$2,609,814	$2,757,185	$2,912,878	$3,077,362	$3,251,134	$3,434,719
Other Fees [1/]	$1,770,000	$1,841,279	$1,915,428	$1,992,564	$2,072,805	$2,297,370	$2,389,886	$2,486,128	$2,586,246	$2,690,395	$2,798,739	$2,911,446	$3,028,691	$3,150,658	$3,277,537	$3,409,525	$3,546,829	$3,689,662
Svc-Arprt -Pkg-Cre	$355,000	$383,400	$414,072	$447,198	$482,974	$521,611	$563,340	$1,171,748	$1,265,488	$1,366,727	$1,476,065	$1,594,150	$1,721,682	$1,859,417	$2,008,170	$2,168,824	$2,342,330	$2,529,716
Total Charges for Services	**$3,559,000**	**$3,737,431**	**$3,925,384**	**$4,123,403**	**$4,332,062**	**$4,693,065**	**$4,930,559**	**$5,844,510**	**$6,156,453**	**$6,486,434**	**$6,835,576**	**$7,205,081**	**$7,596,228**	**$8,010,381**	**$8,448,999**	**$8,913,638**	**$9,405,957**	**$9,927,731**
Other Revenues																		
Parking Violations	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600
Interest Earnings	$20,000	$21,600	$23,328	$25,194	$27,210	$29,387	$31,737	$34,276	$37,019	$39,980	$43,178	$46,633	$50,363	$54,392	$58,744	$63,443	$68,519	$74,000
Miscellaneous Commissions	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Total Other Revenues	**$20,600**	**$22,200**	**$23,928**	**$25,794**	**$27,810**	**$29,987**	**$32,337**	**$34,876**	**$37,619**	**$40,580**	**$43,778**	**$47,233**	**$50,963**	**$54,992**	**$59,344**	**$64,043**	**$69,119**	**$74,600**
Total Non-Airline Revenues	**3,579,600**	**3,759,631**	**3,949,312**	**4,149,197**	**4,359,872**	**4,723,052**	**4,962,896**	**5,879,387**	**6,194,072**	**6,527,014**	**6,879,355**	**7,252,314**	**7,647,191**	**8,065,374**	**8,508,343**	**8,977,681**	**9,475,076**	**10,002,332**

NOTES: FY ending September 30. Numbers may not add due to rounding.

1/ Other Fees include concession revenues, ground transportation fees, rental car commission, fuel flowage fees, and utility reimbursement.

SOURCE: Monroe County Department of Airports, March 2019.

Table 9-9: Projected Terminal Rental Rates and Revenues

		PROJECTED																
	ESTIMATED 2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Terminal O&M Expense																		
Personal Services	$764,366	$810,228	$858,842	$910,372	$964,994	$1,057,388	$1,120,831	$1,188,081	$1,259,366	$1,334,928	$1,415,024	$1,499,925	$1,589,921	$1,685,316	$1,786,435	$1,893,621	$2,007,238	$2,127,672
Contractual Services-Non Security	$817,718	$871,774	$929,541	$991,278	$1,057,264	$1,323,491	$1,410,633	$1,503,691	$1,603,072	$1,709,216	$1,822,592	$1,943,701	$2,073,082	$2,211,311	$2,359,003	$2,516,818	$2,685,464	$2,865,697
Supplies & Materials	$128,700	$136,785	$145,415	$154,627	$164,463	$174,964	$186,177	$198,150	$210,938	$224,595	$239,183	$254,765	$271,410	$289,193	$308,191	$328,490	$350,179	$373,355
General	$253,663	$265,977	$279,126	$293,167	$308,163	$324,179	$341,288	$359,564	$379,089	$399,950	$422,239	$446,056	$471,507	$498,706	$527,774	$558,841	$592,046	$627,539
ARFF Non-Personnel Services O&M Expense	$19,255	$20,603	$22,045	$23,588	$25,239	$27,006	$28,896	$30,919	$33,083	$35,399	$37,877	$40,529	$43,365	$46,401	$49,649	$53,125	$56,843	$60,822
Security Services Non-Personnel Services O&M Expense	$71,713	$76,733	$82,104	$87,851	$94,001	$100,581	$107,622	$115,155	$123,216	$131,841	$141,070	$150,945	$161,511	$172,817	$184,914	$197,858	$211,708	$226,527
Subtotal Terminal - Basic O&M Expense	**$2,058,360**	**$2,182,099**	**$2,317,072**	**$2,460,883**	**$2,614,123**	**$3,007,609**	**$3,195,447**	**$3,395,560**	**$3,608,764**	**$3,835,929**	**$4,077,984**	**$4,335,920**	**$4,610,796**	**$4,903,743**	**$5,215,965**	**$5,548,752**	**$5,903,478**	**$6,281,613**
Less: 10% Departure Lounge Restroom Credit	$(2,839)	$(3,010)	$(3,196)	$(3,394)	$(3,606)	$(4,148)	$(4,407)	$(4,683)	$(4,977)	$(5,291)	$(5,625)	$(5,980)	$(6,359)	$(6,764)	$(7,194)	$(7,653)	$(8,142)	$(8,664)
Net Terminal Basic O&M Expense	**$2,055,521**	**$2,179,090**	**$2,313,876**	**$2,457,489**	**$2,610,518**	**$3,003,460**	**$3,191,040**	**$3,390,877**	**$3,603,787**	**$3,830,639**	**$4,072,360**	**$4,329,940**	**$4,604,437**	**$4,896,979**	**$5,208,771**	**$5,541,099**	**$5,895,336**	**$6,272,949**
Net Contractual Services - Security	$1,422,741	$1,471,083	$1,536,678	$1,605,037	$1,676,275	$1,750,513	$1,827,874	$1,908,490	$1,992,495	$2,080,030	$2,171,243	$2,266,285	$2,365,316	$2,468,501	$2,576,013	$2,688,032	$2,804,744	$2,926,345
Net Terminal O&M Expense	**$3,478,262**	**$3,650,173**	**$3,850,554**	**$4,062,526**	**$4,286,793**	**$4,753,973**	**$5,018,914**	**$5,299,367**	**$5,596,282**	**$5,910,669**	**$6,243,602**	**$6,596,225**	**$6,969,753**	**$7,365,480**	**$7,784,784**	**$8,229,131**	**$8,700,080**	**$9,199,294**
Terminal Capital Expense																		
Future Debt Service (Master Plan Projects)	$-	$-	$-	$-	$-	$-	$-	$1,547,615	$1,547,615	$1,547,615	$1,547,615	$1,547,615	$1,547,615	$1,547,615	$1,547,615	$1,547,615	$1,547,615	$1,547,615
Future Debt Service (Non-Master Plan Projects)	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Existing Amortization	$27,167	$20,890	$17,366	$14,494	$10,568	$5,236	$5,236	$5,236	$5,236	$5,236	$-	$-	$-	$-	$-	$-	$-	$-
Future Amortization	$-	$-	$-	$-	$-	$-	$-	$146,904	$298,215	$454,066	$614,592	$779,934	$950,236	$1,125,647	$1,306,321	$1,492,415	$1,684,091	$1,734,614
Amortization for Master Plan Projects	$-	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$14,451	$-	$-
Amortization for Non-Master Plan Projects	$-	$18,857	$182,639	$194,675	$206,712	$218,748	$230,784	$230,784	$230,784	$230,784	$230,784	$230,784	$230,784	$230,784	$230,784	$230,784	$230,784	$67,003
Capital Expense	$387	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500
Total Terminal Capital Expense	**$27,554**	**$54,699**	**$214,956**	**$224,120**	**$232,231**	**$238,936**	**$250,972**	**$1,945,492**	**$2,096,803**	**$2,252,654**	**$2,407,943**	**$2,573,285**	**$2,743,587**	**$2,918,999**	**$3,099,672**	**$3,285,766**	**$3,462,991**	**$3,349,732**
Terminal Requirement	**$3,505,816**	**$3,704,871**	**$4,065,510**	**$4,286,646**	**$4,519,024**	**$4,992,909**	**$5,269,886**	**$7,244,859**	**$7,693,085**	**$8,163,323**	**$8,651,546**	**$9,169,510**	**$9,713,340**	**$10,284,479**	**$10,884,456**	**$11,514,897**	**$12,163,072**	**$12,549,026**
Terminal Rent Calculation																		
Terminal Basic O&M and Capital Requirement	$2,083,075	$2,233,788	$2,528,832	$2,681,610	$2,842,749	$3,242,396	$3,442,012	$5,336,369	$5,700,590	$6,083,292	$6,480,303	$6,903,225	$7,348,024	$7,815,978	$8,308,443	$8,826,865	$9,358,327	$9,622,681
Total Terminal Productive Space (square feet) 1/	60,271	60,271	60,271	60,271	60,271	74,538	74,538	74,538	74,538	74,538	74,538	74,538	74,538	74,538	74,538	74,538	74,538	74,538
Terminal Rental Rate - Basic O&M	**$34.56**	**$37.06**	**$41.96**	**$44.49**	**$47.17**	**$43.50**	**$46.18**	**$71.59**	**$76.48**	**$81.61**	**$86.94**	**$92.61**	**$98.58**	**$104.86**	**$111.47**	**$118.42**	**$125.55**	**$129.10**
Security Component - Terminal Requirement	$1,422,741	$1,471,083	$1,536,678	$1,605,037	$1,676,275	$1,750,513	$1,827,874	$1,908,490	$1,992,495	$2,080,030	$2,171,243	$2,266,285	$2,365,316	$2,468,501	$2,576,013	$2,688,032	$2,804,744	$2,926,345
Total Terminal Productive Space (square feet) 1/	60,271	60,271	60,271	60,271	60,271	74,538	74,538	74,538	74,538	74,538	74,538	74,538	74,538	74,538	74,538	74,538	74,538	74,538
Terminal Rental Rate - Security	**$23.61**	**$24.41**	**$25.50**	**$26.63**	**$27.81**	**$23.48**	**$24.52**	**$25.60**	**$26.73**	**$27.91**	**$29.13**	**$30.40**	**$31.73**	**$33.12**	**$34.56**	**$36.06**	**$37.63**	**$39.26**
Average Terminal Rental Rate (square feet)	**$58.17**	**$61.47**	**$67.45**	**$71.12**	**$74.98**	**$66.98**	**$70.70**	**$97.20**	**$103.21**	**$109.52**	**$116.07**	**$123.02**	**$130.31**	**$137.98**	**$146.03**	**$154.48**	**$163.18**	**$168.36**
Airline Space Rental																		
Airline Space Occupied (square feet)	36,185	36,185	36,185	36,185	36,185	44,751	44,751	44,751	44,751	44,751	44,751	44,751	44,751	44,751	44,751	44,751	44,751	44,751
Airline Space Vacant (square feet)	2,768	2,768	2,768	2,768	2,768	2,768	2,768	2,768	2,768	2,768	2,768	2,768	2,768	2,768	2,768	2,768	2,768	2,768
Airline Space Total (square feet)	**38,953**	**38,953**	**38,953**	**38,953**	**38,953**	**47,519**	**47,519**	**47,519**	**47,519**	**47,519**	**47,519**	**47,519**	**47,519**	**47,519**	**47,519**	**47,519**	**47,519**	**47,519**
Airline Requirement Occupied (square feet)	$2,104,793	$2,224,300	$2,440,817	$2,573,581	$2,713,094	$2,997,601	$3,163,890	$4,349,608	$4,618,710	$4,901,027	$5,194,143	$5,505,114	$5,831,614	$6,174,509	$6,534,719	$6,913,218	$7,302,363	$7,534,079
Airline Requirement Vacant (square feet)	$161,008	$170,150	$186,712	$196,868	$207,540	$185,413	$195,699	$269,040	$285,685	$303,148	$321,278	$340,513	$360,708	$381,917	$404,198	$427,609	$451,679	$466,012
Airline Requirement	**$2,265,800**	**$2,394,449**	**$2,627,529**	**$2,770,449**	**$2,920,634**	**$3,183,014**	**$3,359,589**	**$4,618,648**	**$4,904,395**	**$5,204,175**	**$5,515,421**	**$5,845,626**	**$6,192,322**	**$6,556,427**	**$6,938,917**	**$7,340,827**	**$7,754,043**	**$8,000,091**

NOTES: FY ending September 30. Numbers may not add due to rounding.

O&M – Operating and Maintenance, ARFF – Aircraft Rescue and Firefighting

1/ Total Terminal Productive Space reflects terminal building rentable space.

SOURCE: Monroe County Department of Airports, March 2019.

Table 9-10: Projected Landing Fee Rates and Revenues

		PROJECTED																
	ESTIMATED 2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Airfield O&M Expense																		
Personal Services	$1,378,750	$1,461,475	$1,549,164	$1,642,113	$1,740,640	$1,870,949	$1,983,206	$2,102,198	$2,228,330	$2,362,030	$2,503,752	$2,653,977	$2,813,216	$2,982,008	$3,160,929	$3,350,585	$3,551,620	$3,764,717
Contractual Services	$117,372	$125,448	$134,097	$143,361	$153,283	$185,288	$197,957	$211,516	$226,027	$241,559	$258,185	$275,982	$295,035	$315,434	$337,275	$360,661	$385,704	$412,522
Supplies & Materials	$21,450	$22,798	$24,236	$25,771	$27,410	$29,161	$31,029	$33,025	$35,156	$37,433	$39,864	$42,461	$45,235	$48,199	$51,365	$54,748	$58,363	$62,226
General	$170,843	$177,360	$184,305	$191,709	$199,603	$208,020	$216,998	$226,573	$236,789	$247,689	$259,320	$271,732	$284,981	$299,122	$314,219	$330,338	$347,548	$365,926
ARFF Non-Personal Services O&M Expense	$154,038	$164,821	$176,359	$188,704	$201,913	$216,047	$231,170	$247,352	$264,667	$283,193	$303,017	$324,228	$346,924	$371,209	$397,193	$424,997	$454,747	$486,579
Security Services Non-Personal Services O&M Expense	$9,562	$10,231	$10,947	$11,713	$12,533	$13,411	$14,350	$15,354	$16,429	$17,579	$18,809	$20,126	$21,535	$23,042	$24,655	$26,381	$28,228	$30,204
Subtotal Airfield - Basic O&M Expense	**$1,853,574**	**$1,962,132**	**$2,079,107**	**$2,203,371**	**$2,335,383**	**$2,522,876**	**$2,674,710**	**$2,836,019**	**$3,007,398**	**$3,189,482**	**$3,382,946**	**$3,588,506**	**$3,806,925**	**$4,039,014**	**$4,285,637**	**$4,547,710**	**$4,826,209**	**$5,122,173**
Net Contractual Services - Security	$236,876	$252,523	$262,727	$273,343	$284,388	$295,879	$307,835	$320,274	$333,215	$346,679	$360,688	$375,262	$390,425	$406,201	$422,615	$439,691	$457,458	$475,943
Net Airfield O&M Expense	**$2,090,450**	**$2,214,656**	**$2,341,834**	**$2,476,714**	**$2,619,771**	**$2,818,755**	**$2,982,545**	**$3,156,293**	**$3,340,613**	**$3,536,162**	**$3,743,634**	**$3,963,768**	**$4,197,351**	**$4,445,216**	**$4,708,252**	**$4,987,401**	**$5,283,667**	**$5,598,116**
Airfield Capital Expense																		
Future Debt Service (Master Plan Projects)	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Future Debt Service (Non-Master Plan Projects)	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Existing Amortization	$14,039	$12,953	$9,428	$7,992	$7,253	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Future Amortization	$-	$-	$-	$-	$-	$-	$-	$4,052	$8,226	$12,525	$16,952	$21,513	$26,211	$31,049	$36,033	$41,166	$46,453	$47,846
Amortization on Master Plan Projects	$-	$9,095	$10,066	$11,872	$44,972	$52,996	$52,996	$52,996	$52,996	$52,996	$52,996	$57,529	$60,971	$626,842	$740,465	$740,465	$733,817	$733,817
Amortization on Non-Master Plan Projects	$-	$-	$-	$-	$-	$22,663	$22,663	$22,663	$22,663	$22,663	$22,663	$22,663	$22,663	$22,663	$22,663	$-	$-	$-
Capital Expense	$3,098	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500
Total Airfield Capital Expense	**$17,137**	**$22,548**	**$19,994**	**$20,364**	**$52,725**	**$76,159**	**$76,159**	**$80,211**	**$84,385**	**$88,684**	**$93,112**	**$102,205**	**$110,345**	**$681,054**	**$799,661**	**$782,131**	**$780,770**	**$782,164**
Total Airfield Requirement	$2,107,587	$2,237,203	$2,361,829	$2,497,078	$2,672,496	$2,894,915	$3,058,704	$3,236,504	$3,424,999	$3,624,846	$3,836,746	$4,065,973	$4,307,695	$5,126,270	$5,507,913	$5,769,532	$6,064,438	$6,380,280
Less: Estimated General Aviation Revenue	$(221,824)	$(228,479)	$(235,333)	$(242,393)	$(249,665)	$(257,155)	$(264,869)	$(272,816)	$(281,000)	$(289,430)	$(228,479)	$(235,333)	$(242,393)	$(249,665)	$(257,155)	$(264,869)	$(272,816)	$(281,000)
Airfield Requirement	**$1,885,763**	**$2,008,725**	**$2,126,496**	**$2,254,685**	**$2,422,831**	**$2,637,760**	**$2,793,835**	**$2,963,688**	**$3,143,998**	**$3,335,416**	**$3,608,267**	**$3,830,640**	**$4,065,302**	**$4,876,605**	**$5,250,758**	**$5,504,663**	**$5,791,622**	**$6,099,280**
Landing Fee Calculation																		
Passenger Airline Landed Weight (thousand pounds)	493,261	500,198	513,341	520,646	533,929	545,176	552,689	565,992	579,194	592,252	602,913	613,765	624,813	636,059	647,508	659,164	671,029	683,107
Cargo Airline Landed Weight (thousand pounds)	5,781	5,862	6,016	6,102	6,258	6,389	6,478	6,633	6,788	6,941	7,066	7,193	7,323	7,455	7,589	7,725	7,864	8,006
Total Airline Landed Weight (thousand pounds)	**499,042**	**506,061**	**519,357**	**526,748**	**540,187**	**551,566**	**559,167**	**572,625**	**585,982**	**599,193**	**609,979**	**620,958**	**632,136**	**643,514**	**655,097**	**666,889**	**678,893**	**691,113**
Airline Landing Fee Rate	**$3.78**	**$3.97**	**$4.09**	**$4.28**	**$4.49**	**$4.78**	**$5.00**	**$5.18**	**$5.37**	**$5.57**	**$5.92**	**$6.17**	**$6.43**	**$7.58**	**$8.02**	**$8.25**	**$8.53**	**$8.83**
Passenger Landing Fees	$1,863,918	$1,985,455	$2,101,862	$2,228,566	$2,394,764	$2,607,203	$2,761,471	$2,929,356	$3,107,578	$3,296,778	$3,566,468	$3,786,265	$4,018,209	$4,820,113	$5,189,932	$5,440,895	$5,724,530	$6,028,624
Cargo Landing Fees	$21,845	$23,270	$24,634	$26,119	$28,067	$30,556	$32,364	$34,332	$36,421	$38,638	$41,799	$44,375	$47,093	$56,492	$60,826	$63,767	$67,092	$70,656
Total Landing Fees	**$1,885,763**	**$2,008,725**	**$2,126,496**	**$2,254,685**	**$2,422,831**	**$2,637,760**	**$2,793,835**	**$2,963,688**	**$3,143,998**	**$3,335,416**	**$3,608,267**	**$3,830,640**	**$4,065,302**	**$4,876,605**	**$5,250,758**	**$5,504,663**	**$5,791,622**	**$6,099,280**

NOTES: FY ending September 30. Numbers may not add due to rounding.
O&M – Operating and Maintenance, ARFF – Aircraft Rescue and Firefighting
SOURCE: Monroe County Department of Airports, March 2019.

9.5 Application of Revenues and Key Financial Metrics

Airport revenues will be deposited into the Revenue Fund and applied to the following funds and accounts in the following order of priority:

- **Operating, Maintenance, and Administrative Fund**: To pay operation and maintenance expenses for cost-center-specific items.
- **Debt Service Fund**: To pay debt service on any bonds, notes, or debt instruments that may be issued by the County to fund Airport capital improvements.
- **Debt Service Reserve Fund**: To fund or restore the debt service fund established in support of any bonds, notes, or debt instruments.
- **Airport Reserve Fund**: All remaining revenues are to be deposited into the Airport Reserve Fund to pay the net costs of Airport capital improvements.

Table 9-11 presents the application of revenues. The table shows the deposits to the Airport Reserve Fund, as well as withdrawals from the fund to pay capital project costs. Each year, the County intends to maintain a minimum balance equivalent to three months of annual O&M expenses in the Airport Reserve Fund.

Table 9-12 summarizes the airline rentals, fees, and charges, as well as the projected CPE and debt service coverage. Airline CPE is projected to increase from $10.55 in FY 2018 to $24.66 in FY 2035, reflecting a CAGR of 5.1 percent. Net revenues are projected to be sufficient to pay the assumed debt service associated with future bonds issued to fund portions of the CIP projects. Debt service coverage ratios range from a high of 4.96 times in FY 2035 to a low of 2.85 times in FY 2025. Since the County does not have any existing outstanding debt service, a minimum coverage ratio of 1.25 times debt service is assumed in accordance with industry standards.

Table 9-11: Application of Revenues

	ESTIMATED 2018	PROJECTED 2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Revenue Account																		
Beginning Balance	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Deposit: Gross Revenues	$9,938,920	$10,459,494	$11,085,500	$11,652,500	$12,281,284	$13,258,812	$13,940,578	$16,337,026	$17,230,537	$18,171,857	$19,230,247	$20,282,294	$21,389,966	$23,120,107	$24,461,573	$25,734,081	$27,085,248	$28,336,723
Transfer: To Operating, Maintenance and Administrative Fund	$(7,572,646)	$(7,980,943)	$(8,413,127)	$(8,870,658)	$(9,355,092)	$(10,202,849)	$(10,766,236)	$(11,363,010)	$(11,995,232)	$(12,665,094)	$(13,374,929)	$(14,127,218)	$(14,924,602)	$(15,769,889)	$(16,666,070)	$(17,616,326)	$(18,624,045)	$(19,692,833)
Transfer: To Debt Service Fund	$-	$-	$-	$-	$-	$-	$-	$(1,743,314)	$(1,743,314)	$(1,743,314)	$(1,743,314)	$(1,743,314)	$(1,743,314)	$(1,743,314)	$(1,743,314)	$(1,743,314)	$(1,743,314)	$(1,743,314)
Transfer: To Reserve Fund	$(2,366,274)	$(2,478,550)	$(2,672,374)	$(2,781,841)	$(2,926,192)	$(3,055,963)	$(3,174,342)	$(3,230,703)	$(3,491,992)	$(3,763,449)	$(4,112,005)	$(4,411,762)	$(4,722,051)	$(5,606,904)	$(6,052,190)	$(6,374,441)	$(6,717,889)	$(6,900,576)
Ending Balance	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Operating, Maintenance and Administrative Fund																		
Beginning Balance	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Deposit: From Revenue Account	$7,572,646	$7,980,943	$8,413,127	$8,870,658	$9,355,092	$10,202,849	$10,766,236	$11,363,010	$11,995,232	$12,665,094	$13,374,929	$14,127,218	$14,924,602	$15,769,889	$16,666,070	$17,616,326	$18,624,045	$19,692,833
Expend: Operating, Maintenance and Administrative Costs	$(7,572,646)	$(7,980,943)	$(8,413,127)	$(8,870,658)	$(9,355,092)	$(10,202,849)	$(10,766,236)	$(11,363,010)	$(11,995,232)	$(12,665,094)	$(13,374,929)	$(14,127,218)	$(14,924,602)	$(15,769,889)	$(16,666,070)	$(17,616,326)	$(18,624,045)	$(19,692,833)
Ending Balance	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Debt Service Fund																		
Beginning Balance	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Deposit: From Revenue Account	$-	$-	$-	$-	$-	$-	$-	$1,743,314	$1,743,314	$1,743,314	$1,743,314	$1,743,314	$1,743,314	$1,743,314	$1,743,314	$1,743,314	$1,743,314	$1,743,314
Deposit: PFC Revenues to Pay PFC Supported Debt Service	$-	$-	$-	$-	$-	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198	$1,879,198
Expend: Proposed Debt Service	$-	$-	$-	$-	$-	$(1,879,198)	$(1,879,198)	$(3,622,512)	$(3,622,512)	$(3,622,512)	$(3,622,512)	$(3,622,512)	$(3,622,512)	$(3,622,512)	$(3,622,512)	$(3,622,512)	$(3,622,512)	$(3,622,512)
Ending Balance	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Debt Service Reserve Fund																		
Beginning Balance	$-	$-	$-	$-	$-	$-	$1,879,198	$1,879,198	$3,622,512	$3,622,512	$3,622,512	$3,622,512	$3,622,512	$3,622,512	$3,622,512	$3,622,512	$3,622,512	$3,622,512
Deposit: From Bond Proceeds (Proposed Series 2023 GARB) [1/]					$-	$-	$-	$1,743,314	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Deposit: From Bond Proceeds (Proposed Series 2023 PFC Bonds) [1/]	$-	$-	$-	$-	$-	$1,879,198	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Ending Balance	$-	$-	$-	$-	$-	$1,879,198	$1,879,198	$3,622,512	$3,622,512	$3,622,512	$3,622,512	$3,622,512	$3,622,512	$3,622,512	$3,622,512	$3,622,512	$3,622,512	$3,622,512
Reserve Fund																		
Beginning Balance	$2,533,097	$4,414,871	$4,075,921	$5,805,795	$6,405,136	$8,456,327	$12,532,290	$13,546,632	$12,132,335	$14,032,977	$16,157,336	$18,546,077	$21,093,929	$16,972,901	$19,318,994	$23,471,029	$27,888,310	$32,590,324
Deposit: From Revenue Account	$2,366,274	$2,478,550	$2,672,374	$2,781,841	$2,926,192	$3,055,963	$3,174,342	$3,230,703	$3,491,992	$3,763,449	$4,112,005	$4,411,762	$4,722,051	$5,606,904	$6,052,190	$6,374,441	$6,717,889	$6,900,576
Transfer: Projects to be Reimbursed with PFCs[2/]	$-	$(360,000)	$(20,000)	$(540,000)	$(400,000)	$1,320,000	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Expend: Master Plan Projects [3/]	$(249,500)	$(347,500)	$(672,500)	$(1,342,500)	$(100,000)	$-	$(660,000)	$(3,100,000)	$-	$-	$(35,000)	$(125,000)	$(7,052,000)	$(1,416,000)	$-	$-	$-	$-
Expend: Non-Master Plan Projects [3/]	$(235,000)	$(2,110,000)	$(250,000)	$(300,000)	$(375,000)	$(300,000)	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Expend: Future Capital Projects [4/]	$-	$-	$-	$-	$-	$-	$(1,500,000)	$(1,545,000)	$(1,591,350)	$(1,639,091)	$(1,688,263)	$(1,738,911)	$(1,791,078)	$(1,844,811)	$(1,900,155)	$(1,957,160)	$(2,015,875)	$(2,076,351)
Ending Balance	$4,414,871	$4,075,921	$5,805,795	$6,405,136	$8,456,327	$12,532,290	$13,546,632	$12,132,335	$14,032,977	$16,157,336	$18,546,077	$21,093,929	$16,972,901	$19,318,994	$23,471,029	$27,888,310	$32,590,324	$37,414,549

NOTES: FY ending September 30. Numbers may not add due to rounding.

PFC – Passenger Facility Charge, GARB – General Airport Revenue Bond

1/ Debt service reserve requirement is equivalent to the maximum annual debt service on the proposed future revenue bonds and PFC bonds for the funding of the Master Plan projects.

2/ Master Plan and Non-Master Plan projects initially funded with local funds that will be reimbursed with PFCs.

3/ CIP projects funded with local funds.

4/ Future Capital Projects funded with airport funds escalated at 3 percent annually for inflation.

SOURCE: Monroe County Department of Airports, March 2019.

Table 9-12: Summary of Key Financial Metrics

		PROJECTED																
	ESTIMATED 2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Terminal Rental Rate	$58.17	$61.47	$67.45	$71.12	$74.98	$66.98	$70.70	$97.20	$103.21	$109.52	$116.07	$123.02	$130.31	$137.98	$146.03	$154.48	$163.18	$168.36
Landing Fee	$3.78	$3.97	$4.09	$4.28	$4.49	$4.78	$5.00	$5.18	$5.37	$5.57	$5.92	$6.17	$6.43	$7.58	$8.02	$8.25	$8.53	$8.83
Cost Per Enplaned Passenger	$10.55	$10.90	$11.44	$11.78	$12.22	$13.06	$13.48	$16.03	$16.65	$17.29	$18.09	$18.81	$19.56	$21.38	$22.39	$23.20	$24.06	$24.66
Debt Service Coverage Ratio (1.25 Minimum)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.85	3.00	3.16	3.36	3.53	3.71	4.22	4.47	4.66	4.85	4.96
Reserve Fund - Ending Balance	$4,414,871	$4,075,921	$5,805,795	$6,405,136	$8,456,327	$12,532,290	$13,546,632	$12,132,335	$14,032,977	$16,157,336	$18,546,077	$21,093,929	$16,972,901	$19,318,994	$23,471,029	$27,888,310	$32,590,324	$37,414,549

NOTE: FY ending September 30. Numbers may not add due to rounding.

SOURCE: Monroe County Department of Airports, March 2019.

9.6 Conclusion

The financial analysis presented in this section shows a feasible funding plan for implementing the CIP. Based on analyses of forecast activity at the Airport, in addition to projected revenues and expenses, along with the CIP for FY 2018 through FY 2035, it appears the County has adequate resources to meet the funding requirements for implementing the CIP. The County has access to various funding sources, which include a mix of FAA funding, state funding, PFC revenues, Airport funds, and revenue bond proceeds. The airline rates and overall airline CPE remain reasonable over the Planning Period. Revenues available to pay projected debt service are projected to meet or exceed the assumed minimum requirement of 1.25 times debt service in each year of the Planning Period after the issuance of the debt. [4]

As implementation of the CIP progresses, Airport/County staff should continually assess the financial feasibility of each project. Future considerations regarding funding of the CIP include the following:

- **Enplaned passenger/traffic growth**: The funding plan was developed and analyzed based on the aviation activity forecasts developed for the Airport (see Section 3). Actual year-to-year numbers of enplaned passengers and aircraft operations will likely vary from the forecasts. Significant changes in the numbers of enplaned passengers and aircraft operations may affect revenues and expenses, as well as PFC revenues and AIP grants.
- **Availability of AIP funds**: In developing the estimated funding plan for implementing the CIP, it was assumed that the FAA will continue to authorize and appropriate AIP grants for eligible projects. Since the level of authorized and appropriated AIP grant funds may vary from year to year, alternative funding sources may be required if grants cannot be obtained for certain eligible projects. Conversely, the County should take full advantage of all available AIP grants, including potential discretionary grants. Obtaining such grant funding may reduce the need for PFC revenues and/or Airport cash funding for certain projects, thereby allowing those funds to be used for other projects.
- **Potential increase in maximum PFC level**: Airport industry groups have requested that federal PFC regulations be amended to increase the maximum PFC level from the current $4.50 per eligible enplaned passenger. Although the FAA reauthorization bill enacted in February 2012 nor the FAA reauthorization passed in Congress in 2018 did not address this issue, it is possible that future reauthorization legislation will address it. In developing the financial projections and the funding plan, it was assumed that the current $4.50 PFC in effect at the Airport will remain in effect for the entire Planning Period. If federal PFC regulations are amended and the maximum PFC level is increased, then the County may choose to apply to the FAA for authorization to impose a higher PFC at the Airport.

[4] Since the County does not have any existing outstanding debt service, a minimum coverage ratio of 1.25 times debt service is assumed in accordance with industry standards.

Chapter 10

Airport Layout Plan (ALP) Drawing Set

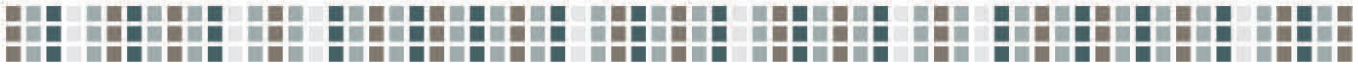


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10. Airport Layout Plan Drawing Set

This Airport Layout Plan (ALP) drawing set is a graphic representation of the preferred alternative development plan for Key West International Airport (EYW or Airport) through 2035. This section provides a brief description of each drawing in the ALP set which include the following sheets:

- Cover Sheet (1 of 13)
- Airport Data Sheet (2 of 13)
- Existing Airport Layout Plan (3 of 13)
- Future Airport Layout Plan (4 of 13)
- Ultimate Airport Layout Plan (5 of 13)
- 14 CFR Part 77 Airport Airspace Plan (6 of 13)
- 14 CFR Part 77 Airport Airspace Insets (7 of 13)
- 14 CFR Part 77 Airspace Data Sheet (8 of 13)
- Inner Portion of the Approach Surface Drawing – Runway 9 (9 of 13)
- Inner Portion of the Approach Surface Drawing – Runway 27 (10 of 13)
- Terminal Area Plan (11 of 13)
- Airport Land Use Plan (12 of 13)
- Airport Property Map (13 of 13)

The drawings stated above were produced using AutoCAD software with vertical and horizontal accuracy using a digitized map developed by Martinez Geospatial. This aerial image was flown in April 2016. The coordinates, elevations, and aerial photogrammetry are in U.S. survey feet. The horizontal datum is the Florida East State Plane Coordinate System, North American Datum of 1983/1990 adjustment (NAD 83/90). The vertical datum is the North American Vertical Datum of 1988 (NAVD 88). These drawings were developed and produced in 24-inch by 36-inch sheets. A full-size set of the drawings is being submitted with this report to the Federal Aviation Administration (FAA) and the Florida Department of Transportation (FDOT) for review and approval. **Appendix E** presents an ALP Review Checklist in accordance with FAA guidance found in Standard Operating Procedure 2.0, *Standard Procedure for FAA Review and Approval of Airport Layout Plans*.

The critical design aircraft is defined as the most demanding aircraft that will substantially use the Airport, with "substantially" defined as either 500 or more annual itinerant operations or scheduled service. Also, the critical design aircraft can be either a single aircraft or a composite of the most demanding characteristics of several aircraft.[1] The previous Master Plan identified the Boeing 737-700W as the critical aircraft for Runway 9/27. The Boeing 737-700W is a C-III aircraft.

10.1 Runway Design Code

The Runway Design Code (RDC) is a coding system described in FAA AC 150/5300-13A, *Airport Design*, *Change 1*; it is the basis for specifying applicable runway design standards. The intent of the RDC is to provide a simple method for compiling the numerous dimensional and performance specifications for aircraft operating at or forecast to operate at an airport; the specifications are translated into criteria that define the dimensional and design standards for a given runway. The RDC consists of three parameters: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and approach visibility minimums.

EYW has one runway: Runway 9/27. The following subsections describe the RDC for each runway end.

10.1.1 RUNWAY 9/27

- Aircraft Approach Category – From an approach speed standpoint, the Boeing 737-700W is the critical aircraft; this aircraft is categorized as AAC C.
- Airplane Design Group – Based on wingspan, the Boeing 737-700W is the critical aircraft; this aircraft is categorized as ADG III.
- Visibility Minimums – Both ends of Runway 9/27 are non-precision instrument (NPI) approaches, providing visibility minimums of 1-mile.

[1] Federal Aviation Administration, Advisory Circular 150/5000-XX, *Critical Aircraft and Regular Use Determination*, Draft.

10.2 Runway Reference Codes

The Runway Reference Codes, or the Approach Reference Code and the Departure Reference Code (APRC and DPRC), describe the current operational capabilities of a runway and adjacent taxiways where no special operating procedures are necessary. The APRC consists of the same three parameters as the RDC, Runway Design Code (AAC, ADG, and visibility minimums), whereas the DPRC consists of the AAC and ADG only. The APRC and DPRC coding system is described in FAA AC 150/5300-13A, *Airport Design*, *Change 1*.[2]

The APRC and DPRC are determined based on the existing runway-to-taxiway separation and visibility minimums. At EYW, the runway centerline separation from the associated full-length parallel Taxiway A centerline is 315 feet. The runway-to-taxiway separation combined with the visibility minimums result in APRCs of B/III/5000 and D/II/5000 for both ends of Runway 9/27. The ultimate APRCs for Runway 9/27 will remain the same. The DPRCs at EYW are B/III and D/II for both ends of Runway 9/27. The ultimate DPRCs for Runway 9/27 will remain the same. **Table 10.2-1** summarizes the APRCs and the DPRCs at EYW.

Table 10.2-1: EYW Approach and Departure Reference Codes

	EXISTING		ULTIMATE	
RUNWAY	APPROACH REFERENCE CODE (APRC)	DEPARTURE REFERENCE CODE (DPRC)	APPROACH REFERENCE CODE (APRC)	DEPARTURE REFERENCE CODE (DPRC)
9	B/II/5000; D/II/5000	B/II; D/II	Same	Same
27	B/II/5000; D/II/5000	B/II; D/II	Same	Same

SOURCES: Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, *Change 1*, §323, February 26, 2014.
PREPARED BY: Ricondo & Associates, Inc., October 2018.

10.3 Cover Sheet

The first sheet in the ALP drawing set is the Cover Sheet, which lists the drawings found within the ALP drawing set. A location map is provided showing the general location of the airport in relation to the State of Florida and a vicinity map is provided showing the location of the airport and major roads in the City of Key West. The names of the Monroe County Board of County Commissioners who represent the governing body of the airport is also included on this sheet.

[2] Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, *Change 1*, §323, February 26, 2014.

10.4 Airport Data Sheet

Sheet 2, the Airport Data Sheet, contains data tables and a list of abbreviations used throughout the ALP drawing set. The following tables are included on the airport data sheet:

- **Abbreviations** – A list of abbreviations used in the ALP drawing set.
- **Airport Data Table** – This table lists existing, future, and ultimate information specific to the Airport, such as airport property acreage, airport elevation, airport reference code, airport reference point, mean maximum temperature, design aircraft, Navaids, airport magnetic variation, airport NPIAS category, and state equivalent service role.
- **Runway Data Table** – This table portrays information relating specifically to the two runways at the Airport. Various specifications are listed for each existing, future, and ultimate runway, including, but not limited to, runway location, dimensions, ADG, available lighting and navigational aids, and safety areas as defined in FAA AC 150/5300-13A (Change 1), *Airport Design*.
- **Modification of Standards (MOS) Table** – This table documents the approved or pending MOS's to FAA AC 150/5300-13A Change 1, *Airport Design*, which include non-standard runway to parallel taxiway separation, runway gradient, and runway object free area.
- **Existing Taxiway Data Table** – This table provides information associated with the existing taxiways at the Airport, including, but not limited to, taxiway width, shoulder width, and taxiway safety area and object free area sizes.
- **Future Taxiway Data Table** – This table provides information associated with the future and ultimate taxiways at the Airport, including, but not limited to, taxiway width, shoulder width, and taxiway safety area and object free area sizes.
- **Declared Distances Table** – This table presents the declared distances for Runway 9-27 in their existing, future, and ultimate configuration. A graphical representation of this information is presented next to the table.
- **Wind Rose and Wind Coverage Table** – A graphical representation of the airport wind roses and wind data is depicted on this sheet. This information was obtained from the National Climatic Data Center provided by the U.S Department of Commerce. Weather data for the period of record from 2006 – 2015 (10-year annual averaged data) with 87,463 observations was used. Wind data is provided for all weather conditions, visual meteorological conditions (ceiling at or above 1,000 feet and visibility greater than or equal to 3 miles), and instrument meteorological conditions (ceiling below 1,000 feet and/or visibility less than 3 miles).

10.5 Existing Airport Layout Plan

The Existing Airport Layout Plan shown on Sheet 3 is provided as a reference document to identify existing facilities (including airfield pavement, buildings and other structures). The ALP sheet represents the Airport in its entirety at a scale of 1 inch = 300 feet. The ALP drawing is a graphic presentation of the actual layout of the physical facilities at EYW. Major features of the ALP drawing include runways, taxiways, aprons, NAVAIDS, other existing airport facilities, and the roadway system. This drawing also includes the runway approaches, runway end elevations, runway high and low points, true azimuths for each runway, and the angle of declination (magnetic north) including the annual rate of change for the magnetic declination. It also includes pertinent clearance and dimensional information associated with the runways and taxiways such as RSAs, ROFAs, and RPZs. Imaginary elements are also included on the drawing sheet including airport reference point (existing), ground terrain contours, and other dimensional data recommended by the FAA.

10.6 Future Airport Layout Plan

Sheet 4 in the ALP drawing set is the Future Airport Layout Plan. This sheet depicts the current conditions at the airport as of September 2018 as well as any proposed future development. The graphical scale of the drawing is 1 inch = 600 feet. A compass with the angle of declination (magnetic north), including the annual rate of change for the magnetic declination is included above the scale. This drawing presents the existing airport runway, taxiways, facilities, Off-airport facilities and roadways, safety areas, and runway approaches. Location information such as the airport reference point and key elevations for the runway are also included. Future proposed additions or changes to these areas are presented in a different block/color for easy referencing. Future facility and infrastructure improvements depicted on this sheet include the following:

- New Taxiway's and Existing Taxiway Geometry Improvements
- Commercial Apron Expansion
- Overflow Aircraft Parking Apron Construction
- Passenger Terminal Improvements and Expansion
- Taxiway A Extension to the West
- General Aviation Access Road Construction
- Vehicle Service Road Relocation
- New Perimeter Fence
- Taxiway D Relocation
- Runway 27 Bypass Taxiway and Safety Improvements
- Rental Car and Public Parking Facilities

The ALP demonstrates the Airport's compliance with standards set forth in FAA AC 150/5300-13A (Change 1), Airport Design, or necessary modifications to those standards as presented on the data sheet (sheet 2). This future ALP sheet serves as an overview for the Federal Aviation Administration and EYW as grants and other federal funding improvements are considered.

10.7 Ultimate Airport Layout Plan

Sheet 5, Ultimate Airport Layout Plan, presents the ultimate development vision for the Airport. Scheduling for the projects presented on this sheet is not certain and will be based on the availability of funding. However, the FAA Orlando Airports District Office (ADO) recommended that the ultimate vision for the development of the Airport, including the elimination of the modification of standard for the non-standard runway to taxiway separation distance, be presented as part of the ALP drawing set. Specifically, the Ultimate ALP reflects the relocation of Runway 9-27 85 feet north, in order to provide a 400-foot runway-to-taxiway separation. This project will be completed when funding is available, the environmental process is completed, and mitigation plans are available to minimize impacts during and after construction. This drawing also illustrates the expansion of the terminal expansion to the east.

10.8 14 CFR Part 77 Surfaces

Sheet 6 of the ALP drawing set provides the 14 CFR Part 77 Airport Airspace Plan, sheet 7 provides the Airport Airspace Plan and sheet 8 provides the 14 CFR Part 77 data tables. To enhance the safe operation of aircraft in the airspace around an airport, the FAA has adopted 14 CFR Part 77, "Safe, Efficient Use, and Preservation of the Navigable Airspace." Subpart C of 14 CFR Part 77 establishes imaginary surfaces for determining obstructions to air navigation, which are illustrated on the Airport Airspace Plans. The Airport Airspace Plans also illustrate physical features on and around the Airport, which include existing obstructions that penetrate the 14 CFR Part 77 imaginary surfaces. Local zoning ordinances are established for 14 CFR Part 77 protective airspace surfaces. Refer to Key West, Florida Code of Ordinances Section 122-1438 for Airport zones and Airport height limitations.

14 CFR Part 77 surfaces correspond to available navigational aids and types of approaches available to a runway end. **Table 10.7-1** summarizes the 14 CFR Part 77 dimensions associated with both ends Runway 9 and 27 at the Airport. The specific Part 77 imaginary surfaces depicted on these drawing include:

- **Primary Surfaces** – Longitudinally centered on each runway, this surface extends 200 feet beyond each end of the runway and has an elevation equal to that of the runway centerline. The width of the primary surface is that prescribed for the most precise instrument approach procedure, existing or planned, for either end of the runway. The primary surface for EYW is 500 feet wide.
- **Approach Surfaces** – The approach surfaces are longitudinally centered along the extended centerline and extend outward and upward from each end of the primary surface. The size and slope of the approach surface are based on the type of approach, existing or planned, for that runway end. The inner edge of the approach surface is the same width as the primary surface and the outer edge is 3,500 feet wide. The approach surfaces for EYW have a length from the inner to outer edge of 10,000 feet.
- **Transitional Surfaces** – These surfaces extend outward and upward from the lateral edges of all primary and approach surfaces at a slope of 7 to 1. The overall width of the transitional surfaces is 5,000 feet, which is measured perpendicularly from the runway centerline.

- **Horizontal Surface** – The horizontal surface is a plane located 150 feet above the established Airport elevation with an overall radius of 10,000 feet from the runway centerline. Its perimeter consists of arcs of specific radii connected by lines tangential to the arcs. The arcs are centered on the midpoint of the ends of all primary surfaces.
- **Conical Surface** – This surface extends outward and upward from the edge of the horizontal surface at a slope of 20:1, for a horizontal distance of 4,000 feet.

Table 10.7-1: EYW - 14 CFR Part 77 Imaginary Surfaces by Runway End

	RUNWAY 9 (EXISTING)	RUNWAY 9 (FUTURE/ULTIMATE)	RUNWAY 27 (EXISTING)	RUNWAY 27 (FUTURE/ULTIMATE)
Approach Type	Non-Precision	Same	Non-Precision	Same
Primary Surface Width (feet)	500	Same	500	Same
Horizontal Surface Radius (feet)	10,000	Same	10,000	Same
Approach Surface Width (inner) (feet)	500	Same	500	Same
Approach Surface Width (outer) (feet)	3,500	Same	3,500	Same
Approach Surface Length (feet)	10,000	Same	10,000	Same
Approach Slope	34:1	Same	34:1	Same

SOURCES: Title 14, Code of Federal Regulations, Part 77, "Safe, Efficient Use, and Preservation of the Navigable Airspace," e-CFR data current as of September 9, 2015; Federal Aviation Administration, *Airport/Facility Directory*, January 18, 2015.
PREPARED BY: Ricondo & Associates, Inc., September 2018.

The airspace drawing sheets also identified any obstructions to the Part 77 surfaces. Currently, 496 obstructions have been identified for EYW. Of these 496 obstructions, 226 penetrate the primary surface, 252 penetrate the transitional surface, 10 penetrate the horizontal surface, and 8 penetrate the conical surface. No obstructions were identified in the approach. Of the 496 obstructions identified, 467 obstructions were classified as tree tops which will be trimmed or removed, and 29 obstructions were classified as manmade structures which will be marked/lighted.

10.9 Inner Portion of the Approach Surface Drawings

Runway Inner Approach Surfaces for Runway 9 (Sheet 9) and Runway 27 (Sheet 10) of the ALP provide zoomed in scaled drawing of areas immediately beyond the existing runway ends including the RPZ's. Areas within the runway RPZ's are to be cleared of obstacles that could be a hazard to aircraft operating at the airport according to FAA recommendations. The runway inner approach surface sheets identify objects that penetrate existing and/or proposed approach surfaces. These obstructions could be roadways, manmade structures, natural ground elevations, or natural features. Located in the inner portions of the runway approach surfaces for EYW, 46 obstructions were identified for Runway 9 and 110 obstructions were identified for Runway 27. These

obstructions include treetops which will be trimmed or removed, and manmade structures like utility poles and building objects which will be marked/lighted.

10.10 Terminal Area Plan

Sheet 11 provides the Future Terminal Area Layout, which shows the terminal core and the general aviation expansion area with a scale of 1" = 200'. This sheet provides more detail for future facilities planned at the Airport along with the existing gate and apron parking layout.

10.11 Airport Land Use Plan

The Airport Land Use Plan presented on Sheet 12 of the ALP drawing set illustrates the proposed use of property within the current, expanded boundary of the Airport, or adjacent areas. This sheet identifies various land use areas using various hatch colors. Noise contours are also included representing the 65, 70, and 75 DNL noise levels to show the land uses present in these noise contours. Areas in which the airport has avigation easements are also illustrated. These land use categories include:

- **Airport Operations Area** – Includes the land area reserved for activities supporting and sustaining the safe and efficient operation of aircraft such as runways and taxiways, and property within the limits of the RPZ, runway object free areas, and taxiway object free areas.
- **Aviation** – Includes areas reserved for aviation activity and/or to support aviation activity including hangar's, parking aprons, terminals, and vehicle parking facilities.
- **Non-Aviation** - Area's identified and reserved for non-aviation purposes but who do not include commercial uses.
- **Environmental** – Area's identified as environmental wetlands by the US Fish and Wildlife Service.
- **Community/Government** – Includes area's reserved for places of gathering which including public parks and schools.
- **Vacant** – Area's currently vacant with no designated land use.
- **Residential** – Area's identified for private residencies.
- **Transient Residential** – Area's identified for transient user accommodation including hotels and seasonal residencies.
- **Commercial** – Landside areas identified for income-generating uses including restaurants.

10.12 Airport Property Map

The Airport Property Map on Sheet 13 provides an overview of all land conveyances associated with the airport (available from public records) and how they were acquired in chronological order. Properties that were released and avigation easements obtained are also illustrated on the airport property map. These land conveyances aid in creating the approximate airport property boundary used in the ALP drawing sheets. A table identifies and summarizes the various parcels owned, released, or avigation easement rights obtained by the airport since inception.

Appendix A

Terminal Area Space Allocation



Table A-1 (1 of 4): EYW Terminal Area Space Allocation

ROOM	DESCRIPTION	SF	MEASUREMENT (11/2014)	OCCUPANT
X-100	Electrical Room (ces)	128	16'-0"x8'-0"	Keys Energy
X-101	Electrical Room	146	8'-10"x15'-8"	EYW
X-102	HVAC Mech Room	81	6"-0" x 8"-6"	EYW
X-103	Women's Restroom	33	6'-0" x 5'-6"	Airlines
X-104	Men's Restroom	32	6'-0" x 5'-0"	Airlines
X-105	Storage	63	3"-8"x8'5", 4'-0"x8'-0"	EYW
100	Baggage Claim	3433	NA	Airlines
101	Rental Car	328	20'-6" x 16'-0"	Hertz
102	Rental Car	220	15'-0"x 14-x0"	Dollar
103	Rental Car	221	15'-0"x 14'-0"	Hertz
104	Rental Car	320	15'-0"x 20'-0"	Avis/Budget
105	ATM	27	6'-3" x 4'-2"	Moneytree
106	Janitor's Closet	26	7'-6" x 3'-5"	EYW
107	Baggage Claim Service	0	NA	Na
108	Janitor's Closet	67	8'-0" x 8'-2"	EYW
109	Rental Car	326	21'-0" x 15"-6"	Hertz
110	Women's Restroom	394	17'-9" x 22'-3"	EYW
111	Men's Restroom	416	17'-9" x 25'-7"	EYW
112	Mainenance Office	205	13'-10" x 15'-10"	EYW
114	Hold Room	4920	NA	Airlines
S-101	VCB Escalator Stair Area	934	60'-0" x 18'-0"	Airlines
115	Elevator Lobby	298	16'-16" x 19'-2"	Airlines
115-A	Storage	30	6'-0" x 5'-0"	EYW
115-B	Storage	79	11'-8" x 6'-10"	EYW
115-C	Storage	79	11'-8" x 6'-10"	EYW
116	Electrical Comm. Room	358	20'-6" x 17'-6"	EYW
117	Departure Gate	250	15'-10" x 15'-10"	
118	Departure Gate	250	15'-10" x 15'-10"	Delta
119	Departure Gate	250	15'-10" x 15'-10"	
120	Departure Gate	250	15'-10" x 15'-10"	Silver
121	Departure Gate	290	18'-10" x15'-10"	Southwest
122	Departure Gate	250	15'-10" x 15'-10"	American
123	Gift Shop	390	26'-0" x 15'-0"	Last Chance
124	Rental Space	126	6'-10" x 18'-6"	Seaport Galleries

Table A-1 (2 of 4): EYW Terminal Area Space Allocation

ROOM	DESCRIPTION	SF	MEASUREMENT (11/2014)	OCCUPANT
125	Rental Space	141	7'-8" x 18'-6"	Seaport Galleries
126	Rental Space	141	7'-8" x 18'-6"	Seaport Galleries
127	Rental Space	198	10'-8" x 18'-6"	Seaport Galleries
127-A	NA		NA	NA
128	Men's Restroom	196	13'-6" x 14'-6"	Airlines
129	Women's Restroom	292	13'-6" x 19'-9" , 5'-0" x 5'-0"	Airlines
130	Janitor's Closet	22	5'-6" x 4'-0"	EYW
131	Ops Building Corridor	185	7'-8" x 9'-7", 5'-0" x 22'-0"	Airlines
132	Office Space	225	7'-10" x 8'-10" 10'6" x 15'3"	
133	Office Space	174	16'-6" x 10'-6"	American Eagle
134	Office Space	165	15'-8" x 10'-6"	Delta
135	Office Space	168	10"-9" x 15"-8"	Silver
136	Office Space	153	15'-8" x 9'-9"	American
137	Office Space	130	9'-6" x 13'-8"	
137A	Bag Storage	109	16'-0" x 6'-10"	Airlines
137B	Bag Storage Airside	102	9-'2" x 11'-0"	
138	Carrier Baggage Claim	36	12'-0" x 3'-0"	American
139	Carrier Baggage Claim	36	12'-0" x 3'-0"	Silver
140	Carrier Baggage Claim	36	12'-0" x 3'-0"	Delta
141	Carrier Baggage Claim	36	12'-0" x 3'-0"	
142	Carrier Baggage Claim	36	12'-0" X 3'-0"	Silver
143	Beach Area	1830	30'-0" x 61'-0"	Conch Flyer
144	Restaurant	1920	37'-2" x 51'-4"	Conch Flyer
144A	Restaurant	508	19'-4" x 26'-4"	Conch Flyer
145	Baggage Make-Up Area	7156	84'-0' x 89'-6"	Airlines
200-1	Ticketing & Queue	304	9'-6" x 32'-0"	American
200-2	Ticketing & Queue	304	9'-6" x 32'-0"	American
200-3	Ticketing & Queue	304	9'-6" x 32'-0"	American
200-4	Ticketing & Queue	304	9'-6" x 32'-0"	Delta
200-5	Ticketing & Queue	304	9'-6" x 32'-0"	Delta
200-6	Ticketing & Queue	304	9'-6" x 32'-0"	
200-7	Ticketing & Queue	304	9'-6" x 32'-0"	
200-8	Ticketing & Queue	304	9'-6" x 32'-0"	
200-9	Ticketing & Queue	304	9'-6" x 32'-0"	

Table A-1 (3 of 4): EYW Terminal Area Space Allocation

ROOM	DESCRIPTION	SF	MEASUREMENT (11/2014)	OCCUPANT
200-10	Ticketing & Queue	304	9'-6" x 32'-0"	
200-11	Ticketing & Queue	304	9'-6" x 32'-0"	Silver
200-12	Ticketing & Queue	304	9'-6" x 32'-0"	
201	Public Space	3749	122'-6" x 29'-0"	EYW
201-A	Elevator Lobby	268	8'-0" X 33'-6"	EYW
201-B	Public Space	2835	121'-8" x 21'-3"	EYW
202	Security Check-in	3243	NA	Airlines
203	Future Security Check-in	943	15'-4" x 61'-6"	Airlines
204	Office Space	993	5'-6" x 22'-0",39'-10" x 19'-8", 7'-0" x 12'-10"	Vmd-Mt
204-A	Office Space	144	14'-0" x 10'-3"	Vmd-Mt
204-B	Office Space	150	14'-0" x 10'-8"	Vmd-Mt
205	Office Space	108	9'-4" x 11'-6"	TSA
206	Private Search Room	79	9'-2" x 8'-6"	Airlines
208	Public Women's Restroom	681	11'-6" x 6'-0", 18'-9" x 30'-0", 4'-8" x 10'-6"	EYW
209	Public Men's Restroom	531	6'-2" x 11'-2",6'-6" x 6'-4",10'-3" x 10'-2", 19'-6" x_____	EYW
210	Access Corridor	400	64'-2" x 5'-0"	EYW
211	Janitor's Closet	34	6'-6" x 5'-2"	EYW
212	Public Family Restroom	58	7'-0" x 8'-2"	EYW
213	Electrical Room	425	22'-8" x 19'-0", 4'-9" x 7'-0"	EYW
214	Communication Room	328	21'-9" x 16' -8"	EYW
215	Elevator Mechanical Room	68	10'-10" x 6'-4"	EYW
216	Restaurant Vestibule	431	19'-9" x 22' -0"	Conch Flyer
217	Retail Space	440	18'-9" x 15'-6", 9'-0" x 19'-3"	Jet Lag
218	Office Space	450	20'-0" x 20' - 6", 6'-2" x 7'-0"	TSA
219	Kitchen	865	35'-3" x 19'-10", 14'-0" x 10'-0"	Conch Flyer
220	Gift Shop	670	19'-9" x 22'-6", 6'-0" x 5'-6", 8'-6" x 13'-0", 6'-8" x 13'-0"	Last Chance
221	Restaurant	1490	32' 7" x 42'-5", 21'-0" x 29' -8"	Conch Flyer
221-A	Bar Area	928	20'-10" x 41'-10"	Conch Flyer
221-B	Restaurant Office	116	13'-8" x 8'-6"	Conch Flyer
222	Airline Office Corridor	410	17'-6"x 6'-10", 55'-10" x 5'-2"	Airlines
223	Office Space	161	11'-4" x 14'-0"	American Eagle
223-A	Office Space	32	7'-0" x 4'-6"	American Eagle
223-B	Office Space	18	9'-0" x 11'-0"	American Eagle

Table A-1 (4 of 4): EYW Terminal Area Space Allocation

ROOM	DESCRIPTION	SF	MEASUREMENT (11/2014)	OCCUPANT
223-C	Office Space	103	9'-4" x 11'-0"	American Eagle
223-D	Office Space	99	9'-0" x 11'-0"	American Eagle
224	Office Space	158	11'-6" x 13'-10"	Delta
224-A	Office Space	33	7'-0" x 4'-8"	Delta
224-B	Office Space	105	9'-6" x 11'-0"	Delta
224-C	Office Space	124	9'-6" x 11'-0", 9'-6" x 4'-6"	Delta
225	Office Space	210	17'-0" x 9'-6", 5'-4" x 9'-6"	American
225-A	Office Space	38	7'-8" x 5'-0"	American
225-B	Office Space	99	9'-0" x 11'-0"	American
225-C	Office Space	123	16'-0" x7'-8"	American
226	Airline Corridor	218	16'-6" x 5'-0", 24'-8" x 5'-0"	Airlines
227	Office Space	218	13'-8" x 10'-6", 8'-0" x 8'-10"	
227-A	Office Space	43	5'-9" x 7'-6"	
227-B	Office Space	112	11'-6" x 9'-10"	
227-C	Office Space	107	11'-6" x 9'-3"	
228	Office Space	80	9'-4" x 8'-4"	
228-A	Office Space	70	7'-6" X 8'-4" + 2'-0" x 3'-6"	Silver
228-B	Office Space	102	9'-3" x 11'-0"	Silver
228-C	Office Space	162	17'-0" x 9'-6"	
229	Storage Room	414	16'-8" x 22'-3", 6'-3" x 6'-8"	Vmd-Mt
230	Passenger Exit Lane	934	45'-0" x 6'-9", 79'-6" x 5'-6", 10'-0" x 19'-3"	Airlines
231	Baggage Screening Room	3126	107' -0" x 26'-0"	Airlines
232	Passenger Departure Bridge	945	15'-8" x 60' -0"	Airlines
233	Baggage Bridge	1307	14'-8" x 89'-0"	Airlines
234	Stair	243	11'-0" x 21' -8"	EYW
235	Baggage Core	341	15'-8" x 24"-0"	Airlines
236	Baggage Elevator	56	8'-6" x 6'-0"	Airlines
237	Elevator Machine Room	54	10'-4" x 5'-2"	EYW
238	Tool Room	88	8'-5" x 10'-4"	EYW
239	Generator Room	499	22'x10" x 15'-10", 13'-0" x 10'-4"	EYW
240	Fire Pump Room	330	19'-9" x 16' x 8"	EYW
241	Chiller Control Room	340	22'-10" x 14'-10"	EYW
242	Corridor	347	23'-4" x 6'-10", 22'-0" x 9'-3"	EYW

SOURCE: Jacobs, Inc., 2014 Master Space Allocation for Rates and Charges
PREPARED BY: American Infrastructure Inc.

Appendix B

Federal and State Protected Plants and Animals



Table B-1 (1 of 6): Federal and State Listed Plant and Animal Species

SPECIES	COMMON NAMES	HABITAT	HABITAT PRESENCE AT AIRPORT	FEDERAL STATUS	STATE STATUS	POTENTIAL TO OCCUR AT AIRPORT
Argythamnia blodgettii	Blodgett's wild-mercury	Pine rockland edges, rockland hammocks, coastal berms	No	NL	E	Low
Bourreria cassinifolia	Pineland strongbark	Pine rocklands	No	NL	E	High
Caesalpinia pauciffora	Fewflower holdback	Pine rocklands	No	NL	E	Low
Campyloneurum anaustifolium	Narrow strap fem	Tropical hammocks, cypress swamps	Yes	NL	E	Low
Chamaesyce garberi	Garber's spurge; Garber's sandmat	Pine rocklands, hammock edges, coastal rock barrens, grass prairies, salt flats, beach ridges, swales, disturbed roadsides	Yes	T	E	Low
Cienfuegosia yucatanensis	Yucatan flymallow	Coastal rock barrens, coastal hammocks, salt marshes	Yes	NL	E	Low
Cupania glabra	Florida cupania	Tropical hammocks	Yes	NL	E	Medium
Drypetes diversifolia	Milkbark	Tropical hammocks	Yes	NL	E	Medium
Eugenia confusa	Redberry stopper; tropical ironwood	Rockland hammocks	No	NL	E	Low
Eugenia rhombea	Red stopper	Rockland hammocks	No	NL	E	Low
Gossypium hirsutum	Wild cotton	Tropical thickets, disturbed sites	Yes	NL	E	Low
Guaiacum sanctum	Lignum vitae	Rockland hammocks	No	NL	E	Low
Hippomane mancinella	Manchineel	Coastal berms, brackish edges of hammocks inside the mangrove zone	Yes	NL	E	Medium
Hypelate trifoliata	White ironwood	Rockland hammocks	No	NL	E	Low
Jacquinia keyensis	Joewood	Coastal scrub	No	NL	T	High

Table B-1 (2 of 6): Federal and State Listed Plant and Animal Species

SPECIES	COMMON NAMES	HABITAT	HABITAT PRESENCE AT AIRPORT	FEDERAL STATUS	STATE STATUS	POTENTIAL TO OCCUR AT AIRPORT
Unum arenicola	Sand flax	Pine rockland, mar1 prairie	No	C	E	Low
Passiflora multiflora	White-flowered passionvine	Tropical hammocks	No	NL	E	Medium
Psidium longipes	Long-stalked stopper	Pine rocklands, rockland hammocks	No	NL	T	Low
Psychotria ligustrifolia	Bahama wild coffee	Rockland hammocks	No	NL	E	Low
Sachsia polycephala	Bahama sachsia	Pine rocklands	No	NL	E	Low
Savia bahamensis	Bahama maidenbush	Tropical hammock margins, pine	Yes	NL	E	Low
Strumpfia maritima	Pride-of-Big-Pine	rocklands, coastal thickets	No	NL	E	High
Suriana maritima	Bay cedar	Coastal strand, dunes, pine rockland	No	NL	E	Medium
Swietenia mahagoni	Mahogany	edge, coastal rock barrens	Yes	NL	E	Low
Thrinax morrisii	Brittle thatch palm	Coastal sandy thickets, beaches, dunes	No	NL	E	Low
Thrinax radiata	Florida thatch palm	Tropical hammocks	Yes	NL	E	Low
Tragia saxicola	Pineland nosebum	Hammock edges, pine rocklands	No	NL	E	Low
Vallesia antillana	Pearl berry	Shallow coastal soils	No	NL	E	Low
ANIMALS						
Alligator mississippiensis	American alligator	Permanent bodies of freshwater, marshes, swamps, lakes, rivers	No	T (S/A}	SSC	Low
Crocodylus acutus	American crocodile	Coastal estuarine marshes, mangrove swamps	Yes	E	E	Low
Caretta caretta	Loggerhead	Marine coastal and estuarine waters, nests on coastal sand beaches	No	T	T	Low

Table B-1 (3 of 6): Federal and State Listed Plant and Animal Species

SPECIES	COMMON NAMES	HABITAT	HABITAT PRESENCE AT AIRPORT	FEDERAL STATUS	STATE STATUS	POTENTIAL TO OCCUR AT AIRPORT
Chelonia mydas	Green turtle	Marine coastal and estuarine waters, nests on coastal sand beaches	No	E	E	Low
Dermochelys coriacea	Leatherback turtle	Marine coastal and oceanic waters, nests on coastal sand beaches	No	E	E	Low
Diadophis punctatus acricus	Key ringneck snake	Disturbed portions of tropical hammocks, scrubby pine rocklands, near freshwater sources	Yes	NL	T	Medium
Drymarchon corais couperi	Eastern indigo snake	Various habitats, including mangrove swamps	Yes	T	T	Low
Elaphe guttata guttata	Lower Keys red rat snake	Forested habitats (pine, hardwood and mangrove)	Yes	NL	SSC	Medium
Eretmochelys imbricata	Hawksbill turtle	Marine coastal and oceanic waters, commonly associated with coral reefs, keys, and mangroves, nests on coastal sand beaches	No	E	E	Low
Eumeces egregius eareaius	Florida Keys mole skink	Sandy areas, among debris, driftwood, and tidal wrack	Yes	NL	SSC	Medium
Kinostemon baurii	Lower Keys striped mud turtle	Small, temporary freshwater to slightly brackish water ponds and ditches	No	NL	E	Low

Table B-1 (4 of 6): Federal and State Listed Plant and Animal Species

SPECIES	COMMON NAMES	HABITAT	HABITAT PRESENCE AT AIRPORT	FEDERAL STATUS	STATE STATUS	POTENTIAL TO OCCUR AT AIRPORT
Lepidochelys kempii	Kemp's Ridley turtle	Marine coastal and oceanic waters, commonly associated with sand or mud bottoms, nests on coastal sand beaches	No	E	E	Low
Storeria dekayi victa	Lower Keys Florida brown snake	Pine rocklands, tropical hammocks	Yes	NL	T	Medium
Thamnophis sauritus sackenii	Lower Keys peninsula ribbon snake	Mangroves, salt marsh, freshwater depressions, ditches	Yes	NL	T	Medium
Ajaia ajaja	Roseate spoonbill	Mangrove-dominated inlets and pools, coastal marshes, marine tidal flats and ponds, mangrove islands, man-made dredge spoil islands	Yes	NL	SSC	Medium
Charadrius melodus	Piping plover	Beach dune/coastal strand, near-shore reefs	Yes	T	T	Medium
Columba leucocephala	White-crowned pigeon	Mangrove islands, tropical hammocks	Yes	NL	T	High
Egretta caerulea	Little blue heron	Coastal marshes, freshwater marshes, wet prairies, mangrove swamps, open water, and sand, mud flats	Yes	NL	SSC	High

Table B-1 (5 of 6): Federal and State Listed Plant and Animal Species

SPECIES	COMMON NAMES	HABITAT	HABITAT PRESENCE AT AIRPORT	FEDERAL STATUS	STATE STATUS	POTENTIAL TO OCCUR AT AIRPORT
Egretta rufescens	Reddish egret	Coastal marshes, freshwater marshes, wet prairies, mangrove swamps, open water, and sand, mud flats	Yes	NL	SSC	High
Egretta thula	Snowy egret	Coastal marshes, freshwater marshes, wet prairies, mangrove swamps, open water, and sand, mud flats	Yes	NL	SSC	High
Egretta tricolor	Tricolored heron	Coastal marshes, freshwater marshes, wet prairies, mangrove swamps, open water, and sand, mud flats	Yes	NL	SSC	High
Eudocimus albus	White ibis	Coastal marshes, freshwater marshes, wet prairies, mangrove swamps, open water, and sand, mud flats	Yes	NL	SSC	High
Falco sparverius paulus	Southeastern American kestrel	Open areas w/ long-leaf pine and sand pine or small turkey and live oaks		T	T	High
Falco peregrinus	Peregrine falcon	Open terrain-coastal barrier islands, lake and river margins, coastal ponds and sloughs	Yes	E	E	Medium

Table B-1 (6 of 6): Federal and State Listed Plant and Animal Species

SPECIES	COMMON NAMES	HABITAT	HABITAT PRESENCE AT AIRPORT	FEDERAL STATUS	STATE STATUS	POTENTIAL TO OCCUR AT AIRPORT
Haliaeetus Jeucocephalus	Bald eagle	Pine flatwoods, coastal wetlands, lakes, rivers	Yes	T	T	High
Pandion haliaetus	Osprey	Coastal areas, large lakes, rivers	Yes	NL	SSC	High
Pelecanus occidentalis	Brown pelican	Coastal areas, shallow estuarine waters, sand spits, sand bars, mangrove islands	Yes	NL	SSC	High
Rynchops niger	Black skimmer	Beaches, bays, estuaries, sandbars, tidal creeks, inland lakes	No	NL	SSC	Medium
Speotyto (Athene) Cunicularia floridana	Burrowing owl	Sparsely vegetated high open sandy ground	No	NL	SSC	Low
Stema antillarum	Least tem	Beaches, bays, lagoons, estuaries	No	NL	T	Medium
Stema dougallii	Roseate tern	Nests on bare limestone, beaches, dredge material, newly deposited fill, broken coral heaps; forages on open water over sandbars, reefs, and tidal channels	No	T	T	Low
Trichechus manatus	West Indian manatee	Coastal and estuarine waters, bays, rivers, lakes	No	E	E	Low
Pristis Pectinata	Smalltooth Sawfish	Shallow coastal waters of tropical seas and estuaries	Yes	E	NL	Medium

Appendix C

Forecast Summary & FAA Approval Letter



Table C-1 (1 of 2): Federal Aviation Administration Forecast Summary

	A. FORECAST LEVELS AND GROWTH RATES					AVERAGE ANNUAL COMPOUND GROWTH RATES			
BASE YEAR	BASE YEAR LEVEL	BASE YEAR + 1 YEAR	BASE YEAR + 5 YEARS	BASE YEAR + 10 YEARS	BASE YEAR + 20 YEARS	BASE YEAR + 1 YEAR	BASE YEAR + 5 YEARS	BASE YEAR + 10 YEARS	BASE YEAR + 20 YEARS
2015	2015	2016	2020	2025	2035	2016	2020	2025	2035
Passenger Enplanements									
Air Carrier	85,537	90,347	99,362	92,743	108,437	5.62%	3.04%	0.81%	1.19%
Commuter [1/]	277,265	300,688	333,956	392,963	472,037	8.45%	3.79%	3.55%	2.70%
Total Enplanements	362,802	391,035	433,318	485,707	580,474	7.78%	3.62%	2.96%	2.38%
Operations									
Itinerant									
Air Carrier (incl. Air Cargo)	19,380	20,656	22,910	23,816	25,745	6.58%	3.40%	2.08%	1.43%
Commuter/Air Taxi	4,880	5,370	5,956	6,191	6,693	10.03%	4.06%	2.41%	1.59%
Total Commercial Operations	24,260	26,025	28,866	30,007	32,438	7.28%	3.54%	2.15%	1.46%
General Aviation	24,320	26,025	25,814	27,401	30,873	1.20%	1.20%	1.20%	1.20%
Military	676	676	676	676	676	0.00%	0.00%	0.00%	0.00%
Local									
General Aviation	4,292	4,343	4,556	4,836	5,448	1.20%	1.20%	1.20%	1.20%
Military	0	0	0	0	0	0.00%	0.00%	0.00%	0.00%
Total Operations	53,548	55,657	59,912	62,920	69,435	3.94%	2.27%	1.63%	1.31%
Instrument Operations	53,548	55,657	59,912	62,920	69,435	3.94%	2.27%	1.63%	1.31%
Peak Hour Operations	19	19	20	21	25	0.00%	1.03%	1.01%	1.38%

Table C-1 (2 of 2): Federal Aviation Administration Forecast Summary (Part 2)

	A. FORECAST LEVELS AND GROWTH RATES					AVERAGE ANNUAL COMPOUND GROWTH RATES			
BASE YEAR	BASE YEAR LEVEL	BASE YEAR + 1 YEAR	BASE YEAR + 5 YEARS	BASE YEAR + 10 YEARS	BASE YEAR + 20 YEARS	BASE YEAR + 1 YEAR	BASE YEAR + 5 YEARS	BASE YEAR + 10 YEARS	BASE YEAR + 20 YEARS
2015	2015	2016	2020	2025	2035	2016	2020	2025	2035
Cargo									
Cargo/mail (lbs)[2/]	968,408	1,001,427	1,134,451	1,307,603	1,656,479	3.41%	3.22%	3.05%	2.72%
Based Aircraft									
Single Engine (Nonjet)	42	N/A	43	44	47	N/A	0.47%	0.47%	0.56%
Multi Engine (Nonjet)	11	N/A	14	16	23	N/A	4.94%	3.82%	3.76%
Jet Engine	4	N/A	5	6	8	N/A	4.56%	4.14%	3.53%
Helicopter	1	N/A	1	1	1	N/A	0.00%	0.00%	0.00%
Other	0	N/A	0	0	0	N/A	0.00%	0.00%	0.00%
Total	58	N/A	63	67	79	N/A	1.67%	1.45%	1.56%
			B. OPERATIONAL FACTORS						
Average aircraft size (seats)									
Air Carrier	90	90	89	89	93				
Commuter	37	37	36	36	36				
Average enplaning load factor									
Air Carrier	76%	76%	77%	78%	78%				
Commuter	76%	76%	77%	78%	78%				
General aviation operations per based aircraft	493	N/A	482	481	460				

NOTES:

Figures presented in calendar year.

1/ Commuter as defined by FAA. Commuter operations include takeoff and landings by aircraft with 60 or fewer seats that transport regional passengers on scheduled commercial flights.

2/ Cargo/mail in total pounds (all-cargo carrier enplaned and deplaned).

SOURCES: Federal Aviation Administration (Template); U.S. Department of Transportation, Form T-100, June 2016; U.S. Department of Transportation, DB1B Survey, June 2016; Federal Aviation Administration, May 2016; Ricondo & Associates, Inc., June 2016 (Forecast).

PREPARED BY: Ricondo & Associates, Inc., June 2016.

U.S. Department
of Transportation
**Federal Aviation
Administration**

Orlando Airports District Office
5950 Hazeltine National Dr., Suite 400
Orlando, FL 32822-5003

Phone: (407) 812-6331

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August 24, 2016

Mr. Shane Ingolia
Senior Consultant
200 East Robinson Street
Suite 300
Orlando, FL 32801

RE: Key West International Airport, Key West, Florida
Approval of Master Plan Forecast

The Airport Master Plan forecast, transmitted by your July 15, 2016 letter, is within 10 percent of the Federal Aviation Administration (FAA) Terminal Area Forecast (TAF). Therefore, we concur with its use in the remainder of your current master planning efforts.

Sincerely,

Pedro J. Blanco
Program Manager / Airport Planner

cc: Don DeGraw, Monroe County Department of Airports
Pete Ricondo, Ricondo & Associates, Inc.

Appendix D

Joint-Use Evaluation Study



1. Joint-Use Evaluation

The following section explores preliminary considerations associated with relocating future commercial airline traffic and facilities from Key West International Airport (EYW) and accommodating such operations at Naval Air Station (NAS) Key West – Boca Chica Field (NAS Key West), thus creating a joint-use military and civilian facility. Joint-use airfields are owned and operated by the Department of Defense (DOD) but civilian use is sometimes permitted. There are currently 21 joint-use military airfields in the United States with Eglin Air Force Base (AFB) being the sole joint-use facility in Florida. While joint-use is permitted by Federal law, determination of whether civilian operations are compatible with the military mission is required. The process must be initiated by the Airport owner (in this case Monroe County) through a formal proposal to the base commander. A formal Feasibility Study and Cost Benefit Analysis for Joint-Use of Boca Chica Field was completed by Greiner, Inc. in August 1995 for Monroe County. Additionally, according to NAS Key West personnel a feasibility study was also completed by the Navy in roughly 2008 but was never published or formally considered by Monroe County.

The review conducted in this section does not constitute such a formal proposal but rather a preliminary review of the opportunities and/or challenges that may be expected with such an operation and which should be evaluated further if joint-use is pursued. This review will assist Monroe County, Airport management and other stakeholders decide if a formal proposal should be developed for submittal to the Navy. Further, it should be noted that under this joint-use scenario only commercial airline operations and facilities would be relocated to NAS Key West and all general aviation (GA) activity and facilities would remain at EYW.

Criteria reviewed and evaluated under this task includes; airspace/air traffic control, airfield operations/traffic mix, military activity and security, and facility needs and land use. NAS Key West operations were reviewed to determine potential impacts to existing military missions and operations, as well as reasonably foreseen future conditions. The potential impacts to existing military mission and operations, and possible mitigating alternatives, were largely identified through two coordination meetings with NAS Key West personnel, conducted on September 29, 2016 and April 4, 2017, to discuss the overall challenges and potential mitigating requirements associated with a joint-use operation at NAS Key West.

1.1 Existing Conditions

An overview of the existing facilities and activity types at both EYW and NAS Key West was completed through this master plan report and coordination meetings with NAS Key West personnel. The following sections summarize the existing conditions considered in the joint-use evaluation.

1.1.1 KEY WEST INTERNATIONAL AIRPORT

Significant challenges and constraints exist that impact the current day to day operation and future growth of EYW. These include; a single short runway with a length of 4,801 feet, limited available land for development due to the location of adjacent environmental areas (i.e. mangroves, salt ponds and the Atlantic Ocean), residential development, and a major highway (South Roosevelt Boulevard). The short runway length limits the size and type of commercial aircraft that can operate at the Airport. In addition, a low airfield elevation of 2.8 feet above mean sea level (AMSL) results in periodic, and localized flooding that impacts airport operations during periods of increased rainfall or higher than average tides (e.g. King Tides) due to the tidal nature of the surrounding salt ponds and drainage system. The level and frequency of flooding is projected to increase over the planning period due to the impacts of sea level rise on the low airfield elevation.

1.1.2 NAS KEY WEST – BOCA CHICA FIELD

NAS Key West's mission is to support the operational and readiness requirements for Department of Defense, Department of Homeland Security, Air National Guard units and other Federal agencies and Allied forces. NAS Key West has favorable flying conditions year-round and expansive over-water aerial combat training ranges within minutes of the station that provide training for air-to-air combat fighter aircraft of all military services using sophisticated combat training systems (e.g. P5 Combat Training System/Tactical Combat Training System (P5CTS/TCTS)). The combat training ranges, known as the Key West Complex airspace, is a system of over-water Warning Areas between the Florida Keys and Cuba, to the west beyond the Dry Tortugas, and to the northwest over the Gulf of Mexico.

The airfield regularly hosts active and reserve squadrons from around the country including; U.S. Navy strike fighter squadrons, U.S. Marine Corps attack and fighter squadrons, and U.S. Air Force, Air Force Reserve and Air National Guard fighter and rescue squadrons for training exercises. NAS Key West is also host to additional tenant commands supporting such critical missions as naval research, development testing, counter-drug operations, and special warfare training.

NAS Key West is located on Boca Chica Key, just east of the City of Key West, and includes roughly 4,700 acres of land. The airfield is at an elevation of 5.7 feet AMSL and experiences periodic flooding of infield areas, though impacts to the primary runway and taxiway are not typical. The airfield has three available runways as follows:

- Runway 8-26: 10,001 x 200 ft. – Concrete/asphalt surface with arresting cables (both ends)

- Runway 4-22: 7,002 x 150 ft. – Concrete/asphalt surface with arresting cables (both ends)
- Runway 14-32: 7,001 x 150 ft. – Concrete/asphalt surface with arresting cables (both ends)

The airfield includes runway lighting and associated equipment to support both precision and non-precision instrument approach procedures with visibility minimums as low as one-half mile.

Based on discussions with NAS Key West personnel, aircraft that are either based at or make regular use of the airfield for mission support or through seasonal or periodic training detachments are largely fighter aircraft and typically include; F/A-18 Hornet, F/A-18 Super Hornet, F-5 Tiger, F-22 Raptor, and F-35 Lightening. Additional aircraft that routinely use NAS key West for training exercises and mission support include; EA-18 Growler, P-3 Orion, P-8 Poseidon, E-2 Hawkeye and UH-60 helicopters. Training exercises generally occur daily and increase in frequency during the winter months with transient aircraft from northern locations. NAS Key West has the capacity and capability to host a wide variety of other aircraft, and does at times, for various training, mission support and emergency/relief operations.

1.2 Airspace and Air Traffic Control

Due to the proximity of NAS Key West to EYW, the airspace for each facility overlaps and requires close coordination between NAS Key West air traffic control tower (ATCT) and radar approach/departure control personnel and the EYW ATCT. Enroute civilian aircraft entering the terminal area are handled first by NAS Key West radar approach/departure control and only handed off to the EYW ATCT once that destination is known and no conflicts with other military or civilian aircraft in the area exist. A similar procedure occurs in reverse for aircraft departing EYW. General aviation (GA) aircraft operating under visual flight rules (VFR) must remain west of an established line of demarcation, roughly running north to south over Stock Island, and will remain in contact with the EYW ATCT until transitioning out of the terminal airspace. Military aircraft are handled by NAS Key West and typically transition to/from designated warning areas and training airspace to the south north of Cuba and to the west over the Gulf of Mexico.

Due to the overlapping nature of the airspace various types of air traffic (including military aircraft, commercial airline traffic and GA aircraft, regularly mix within the airspace structure and are coordinated through the radar approach/departure control and appropriate ATCTs depending on aircraft destination or origin. This mix of high and low speed aircraft has been and continues to be manageable within the terminal airspace structure. Thus, limited impacts to the terminal area airspace operation could be anticipated under the commercial airline only joint-use scenario described previously.

Potential conflicts could become evident however, with a varying mix of high speed and low speed traffic operating simultaneously within the landing patterns of NAS Key West. The military aircraft operating on training exercises at NAS Key West typically return to the station with limited fuel

reserves and any unforeseen delay to their normal landing protocol could create an increased risk. Restricting any joint-use operation to only commercial airline traffic and maintaining slower GA traffic at EYW could mitigate a portion of this risk. Additionally, implementing standard operating procedures that give arriving military aircraft priority over civilian commercial aircraft would provide an additional level of mitigation. Lastly, an effort to coordinate military training schedules with airline flight schedules/slot times could further facilitate traffic flow and minimize potential local airspace conflicts in the landing patterns. For example, commercial airline slot times could be established with early morning departures, mid-day turns (arrival/departure) and evening arrivals to minimize the periods where military and civilian aircraft both utilize the local airspace and landing patterns. Extensive coordination between the Airport, airlines and NAS Key West would be required to implement such procedures.

1.3 Airfield Operations and Traffic Mix

The airfield layout at NAS Key West is illustrated in the airport diagram presented in **Exhibit 1-1**. Runway 8-26 is the primary runway and receives the majority of use. The military passenger terminal, transient aircraft parking ramp, aircraft hangars and fighter aircraft parking/staging ramp are all located north of Runway 8-26. Access to these areas from either end of Runway 8-26 is through a combination of Taxiways 'A', 'B', 'C', 'F', 'G' and 'H'. Full length parallel taxiways do not currently exist on either side of Runway 8-26. Thus, any civilian aircraft taxiing to either end of Runway 8-26 would currently be required to utilize the taxiways described previously or to back taxi on the runway. Mixing of traffic on these taxiways would result in potential airfield conflicts between aircraft of varying types and operational characteristics. Pilot training and military mission requirements may also require that specific areas remain out of view from civilian aircraft and the general public. As a result, not all existing taxiways may be accessible for civilian commercial operations. Additionally, potential delays to arriving or departing military aircraft, like those discussed in Section 6.2, could be experienced if delays in the scheduled departure or arrival of commercial airline traffic created competing demands for runway use. However, this mix of varying aircraft performance characteristics is currently experienced periodically when large cargo, charter and transport planes operate to/from NAS Key West in coordination with regular flight training operations.

Typically, all runways and taxiways within the airfield operations areas (AOA) would be available for use under a joint-use operation. However, specific restrictions or other operational procedures may be implemented through the joint-use agreement to mitigate potential airfield operational and traffic mix conflicts like those described previously. Airfield infrastructure improvements such as parallel taxiways to the primary runway could also mitigate these potential conflicts and effectively maintain civilian aircraft operations away from military facilities. If implementation of standard procedures for military priority on departure and/or arrival and coordination of flight schedules, as discussed in Section 6.2, does not effectively mitigate potential delays to military aircraft additional runway capacity could eliminate those conflicts. Additional runway capacity may need to be provided by a parallel runway to allow for simultaneous operations in emergency situations or during required simultaneous operations by civilian and military aircraft. Based on discussions with NAS Key West

personnel during the coordination meetings completed as part of this evaluation, the addition of a parallel runway and a combination of the above procedures would be required to adequately safeguard against potential military aircraft delays and associated operational risks.

1.4 Military Activity and Security

The nature of the military mission and associated activity at NAS Key West requires that a high level of security be provided to protect the station's assets, operations, and overall ability to meet mission goals in support of national security. Certain activities may involve aircraft, operations or other equipment that must be secured from public view and/or photograph. The nature of military operations also often includes procedures that are dangerous to the general public such as; high-pressure and "hot" fueling, ordinance storage and maintenance and active aircraft armament. At NAS Key West the presence of new fifth generation aircraft, such as the F-22 and F-35, require armed manned security when parked on the aircraft ramp. This high level of security is an important consideration in any joint-use operation to ensure mission standards are met.

Based on discussions during the coordination meetings with NAS Key West personnel, security would be a priority and significant factor in any joint-use scenario. Measures to maintain existing levels of protection and overall security for military facilities and equipment would need to be incorporated into any joint-use analysis or proposal. Improved airfield infrastructure to maintain civilian aircraft an acceptable distance from sensitive military facilities and equipment could be utilized to provide necessary levels of security. Further, the location and security provisions included with any required civilian facilities, such as a passenger terminal and auto parking, would need to include varying levels of protection against any potential public incursion onto secure military areas.

1.5 Facility Needs and Land Use

There are currently no existing facilities at NAS Key West that could be repurposed for civilian use. Therefore, any scenario for joint-use of NAS Key West with commercial airline traffic from EYW will require the location and construction of civilian support facilities to accommodate that activity. In general, the facilities that would be required to be constructed at NAS Key West in order support civilian commercial airline operations include the following:

- Parallel runway and supporting taxiway
- Commercial aircraft parking apron and associated lighting
- Commercial passenger terminal building and aircraft boarding gates
- Automobile access road and terminal curb-front
- Automobile parking facilities for passengers and employees
- Rental car and bus parking and associated facilities
- Airport maintenance building/storage

- Airport fuel farm/storage

In general, NAS Key West has limited available land for development that is not classified as environmentally sensitive, currently in use for military operations/facilities, or reserved for future military use. The location and construction of any future civilian facilities to support a joint-use operation at NAS Key West should consider the infrastructure, operational and security factors discussed in the previous sections, as well as general land use compatibility in the area. The location for such facilities must be outside of the AOA but adjacent to the airfield and provide access to surface transportation, ideally US Highway 1.

Based on a review of the August 1995 study prepared by Greiner Inc. and discussions with NAS Key West personnel during the coordination meetings, potential sites for civilian commercial airline facilities have been reviewed previously with limited results. One area that was identified in previous evaluations is located just north of the Runway 26 approach end, between US Highway 1 and a canal that generally runs parallel to Taxiway 'F'. The area is largely federally owned land that appears to be comprised of both wetland and upland features and is approximately 75 acres in size. There are also a number of residential properties located in this area that would need to be evaluated for potential impacts. The site would require a taxiway connection/bridge over the existing canal to Taxiway 'F' and Runway 8-26 to access the airfield. However, the location of the canal would provide an additional level of security preventing access to the military AOA. Direct ground access from US Highway 1 could be provided. Other potential development sites on or adjacent the base should also be evaluated in any formal feasibility study or joint-use proposal.

1.6 Summary

The evaluation of possible joint-use of NAS Key West for the relocation of commercial airline operations and facilities at EYW completed in this section was based on existing published studies, discussions with NAS personnel through two coordination meetings and a review of current operating conditions and activity at both NAS Key West and EYW. The overall goal was to provide a preliminary review of the opportunities and/or challenges that may be expected with such an operation to assist Monroe County, airport management and other stakeholders decide if a formal proposal should be developed for submittal to the Navy.

Based on this review and preliminary coordination, several considerations were identified that could pose a challenge to implementation of a joint-use operation and include the following:

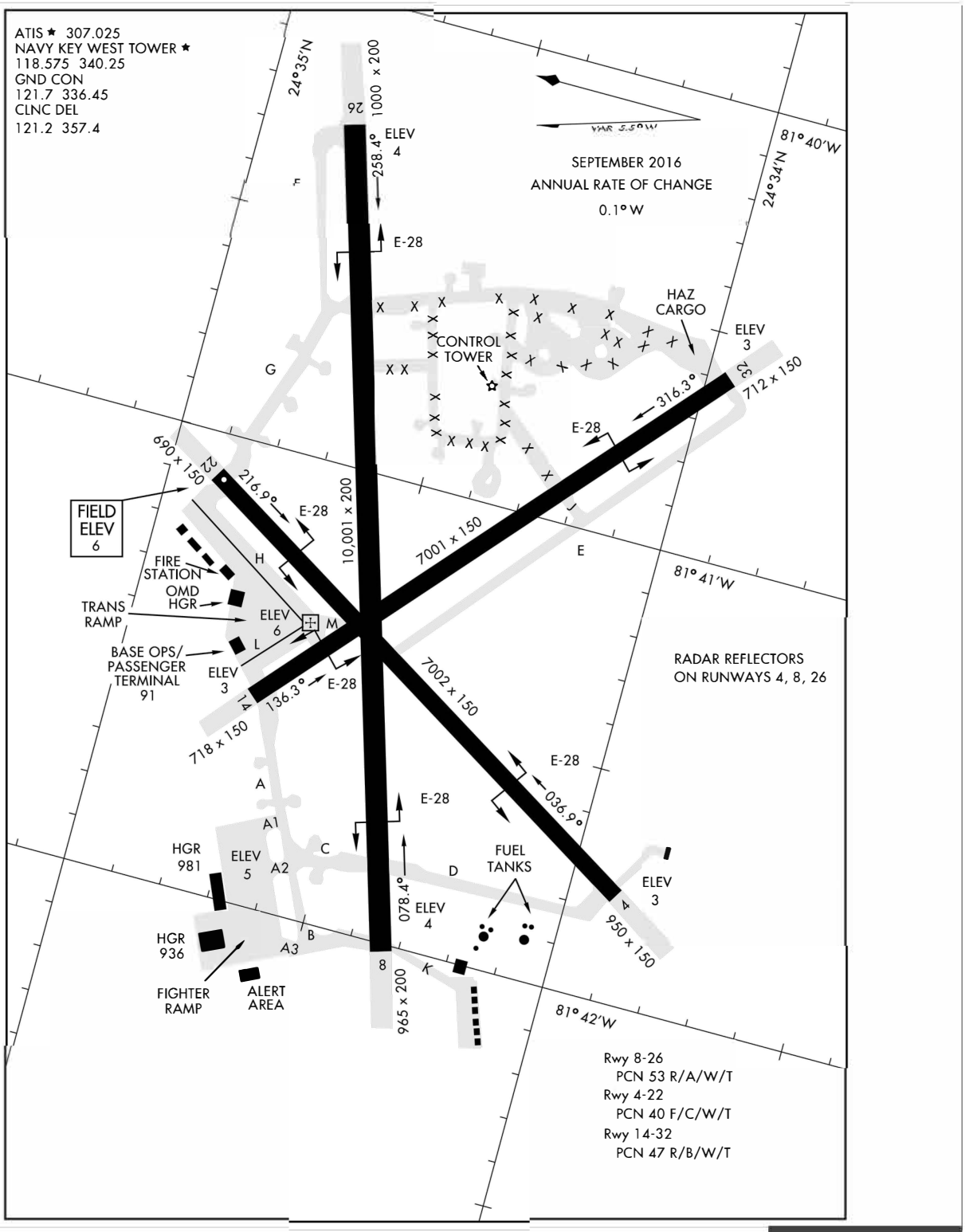
1. Potential delays to arriving military aircraft due to a mix of military and commercial aircraft in the landing patterns, resulting in increased operating risk due to low fuel reserves.
2. Potential airfield operational conflicts due to a mix of military and commercial aircraft with competing demands for taxiway and runway infrastructure.

3. The need to maintain a high level of security to protect the station's assets, operations, and overall ability to meet mission goals in support of national security.
4. Identification of an adequate development site that meets the needs of the civilian facilities while maintaining or enhancing security and land use compatibility.

Though outside the scope of this preliminary review, significant environmental and funding requirements would also need to be met in addition to the considerations outlined above. The evaluation and discussions with NAS personnel also identified possible mitigating alternatives to address the challenges identified above. These include:

1. Mitigate potential military aircraft delays by; restricting joint-use operations to commercial aircraft only, implementing standard operating procedures that give arriving military aircraft priority over civilian aircraft, and coordinate airline flight schedules/slot times with typical military training schedules (as feasible) to facilitate traffic flow and minimize potential local airspace conflicts in the landing patterns.
2. Mitigate potential airfield operational conflicts and further deconflict airspace interactions through airfield infrastructure improvements such as parallel taxiways to the primary runway and additional runway capacity with a new parallel runway to Runway 8-26.
3. Provide necessary levels of security through improved airfield taxiways to maintain civilian aircraft clear of sensitive military facilities and equipment and include enhanced security provisions with the construction of civilian facilities that provide multiple levels of security to protect against potential public incursion onto secure military areas.
4. Further evaluate potential development of the area north of the approach end of Runway 26 and south of US Highway 1 and others as potential sites for civilian commercial operations and facility needs.

As discussed previously, preliminary coordination with NAS Key West personnel outlined mitigation alternatives and operational requirements that should be included in any joint-use operation proposal or feasibility study. Based on this coordination, evaluation and the resulting challenges and mitigating opportunities outlined within this section, further study to fully determine the feasibility and benefit/cost impacts for relocation of commercial operations and facilities from EYW to NAS Key West and establishment of a joint-use facility may be warranted.



SOURCE: FAA Airport Diagram, January, 2018.
PREPARED BY: McFarland Johnson, Inc., January, 2018.

EXHIBIT 1-1

NAS Key West Airport Diagram

Drawing: K:\Key West International Airport\T-18103.00 Key West MPU\Draw\Drawings\Figures\DIAGRAM.dwgLayout: Paper Plotted: Jan 8, 2018, 04:27PM

Appendix E

FAA Standard Operating Procedure (SOP) 2.00 ALP Review Checklist



APPENDIX A. ALP REVIEW CHECKLIST

The following checklist shall be used in lieu of FAA AC 150/5070-6B, Appendix F, Airport Layout Plan Drawing set. This checklist is intended for use when submitting a new or updated ALP to the FAA for review and approval. Consultants and/or sponsors should indicate "Yes," "No" or "N/A" (not applicable) for every item on the checklist. The same checklist shall be provided to FAA for review and verification. For all reviewers: It is important that each item listed be shown on the respective plan.

Airport Identification (to be completed by Sponsor or Consultant)			
Airport	**Key West International Airport**		
City and State	**Key West, Florida**	Location Identifier	**EYW**
Airport Owner	**Monroe County**		

ALP Submission Information (to be completed by Sponsor or Consultant)		
ALP Prepared by:	**Ricondo (Existing & Future ALP); Jacobs (Airspace, Property Map)**	
	Name of Consulting Firm	
	Jeffrey Alexander, C.M. (Ricondo); Morgan Drouin (Jacobs)	**September 2018**
	Name of Individual	Date
	(407) 381-5730	
	Telephone	
	jalexander@ricondo.com	
	Email	
Consulting QA/QC Review:	**Sebastien Carreau (Ricondo); Chris Bowker (Jacobs)**	**September 2018**
	Name and Title of Individual	Date
Sponsor Review:	**Richard Strickland, CM – Director of Airports**	**September 2018**
	Name and Title of Individual	Date

FAA Review (to be completed by FAA)	
Name and Title of Individual	Date

Critical Design Aircraft or Family of Aircraft:

	Make	Model	Annual Itinerant Operations
Existing	**Boeing**	**737-700W**	**C-III Aircraft: 49,256 (CY 2015 – Total Operations)**
Future	**Boeing**	**737-700W**	**C-III Aircraft: 63,987 (CY 2035 – Total Operations)**

Source: EYW Master Plan Update: Aviation Activity Forecasts, *Ricondo & Associates, Inc.*, June 2016.

Forecasted Year: **FY 2035**

Airport Reference Code (ARC): **C-III (Existing); C-III (Future); C=III (Ultimate)**

Runway Design Code (RDC) & Runway Reference (RRC):

Runway	RDC	RRC
See Sheet A-3		

Approach Minimums:

Rwy End	Minimum	Rwy End	Minimum
9	**5,000**	**27**	**5,000**

Runways (Existing and Future):

Runway	Existing		Future		Departure Surface (Y or N/A)
	Length (ft)	Width (ft)	Length (ft)	Width (ft)	
9-27	**5,076'**	**100**	**5,276'**	**Same**	**Y**

Existing			
Runway	**RDC**	**APRC**	**DPRC**
9	C-III-5000	B-III-5000/D-II-5000	B-III/D-II
27	C-III-5000	B-III-5000/D-II-5000	B-III/D-II

Future			
Runway	**RDC**	**APRC**	**DPRC**
9	SAME	SAME	SAME
27	SAME	SAME	SAME

Ultimate			
Runway	**RDC**	**APRC**	**DPRC**
9	SAME	SAME	SAME
27	SAME	SAME	SAME

A.1. Narrative Report

Narrative Report					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Executive Summary – A concise summary of the findings/ recommendations of the master planning effort or changes to the ALP. This should include a description of planned projects, an implementation plan/timeline, and identification of benchmarks or actions that will be conducted to either verify the original planning assumptions or proceed with project implementation.	From AC 150/5070-6, Section 202: An accompanying ALP Narrative Report should explain and document those changes and contain at least the following elements: – Basic aeronautical forecasts. – Basis for the proposed items of development. – Rationale for unusual design features and/or modifications to FAA Airport Design Standards. – Summary of the various stages of airport development and layout sketches of the major items of development in each stage. – An environmental overview to document environmental conditions that should be considered in the identification and analysis of airport development alternatives and proposed projects.	✓			
1. Identify Projects along with description		✓			
2. Create a Timeline for each Project		✓			
3. Identify and List:		✓			
a. Proposed Projects (e.g., Hangar development)		✓			
b. Milestones/ Triggering Events (e.g., 1. All hangars are full, 2. There is a waiting list long enough to fill a new development, 3. Hangars have reached their useful life, etc.)		✓			
c. Action items/Next Steps (e.g., 1. Maintain log and gather data, 2. Discuss plan with ADO, 3. Coordinate with ADO regarding potential for inclusion in FAA ACIP (Airports Capital Improvement Program), 4. Identify funding sources.)		✓			
d. Funding Plan	Capital Improvement Plan for the forecast horizons. See AC 150/5070-6, Chapter 11. Only a rough, order-of-magnitude report is needed in the executive summary.	✓			

Narrative Report					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
B. Basic aeronautical forecasts (0-5, 6-10, 11-20 years): Basic aeronautical forecasts (0-5, 6-10, 11-20 years):	Forecasts of future levels of aviation activity as approved by the FAA. These projections are used to determine the need for new or expanded facilities. See AC 150/5070-6, Chapter 7.	✓			
1. Total annual operations	Total local and itinerant aircraft operations at the airport.	✓			
2. Annual itinerant operations by all aircraft	Itinerant operations by aircraft that leaves the local airspace, generally 25 miles or more from the airport. See AC 150/5070-6, Chapter 7, Section 702.a. and Figure 7-2.	✓			
3. Annual itinerant operations by current critical aircraft		✓			
4. Annual itinerant operations by future critical aircraft		✓			
5. Number of based aircraft	Aircraft that use the subject airport as a home base, i.e., have hangar or tie-down space agreements. See AC 150/5070-6, Chapter 7, Section 702.a. and Figure 7-2.	✓			
6. Annual instrument approaches	Number of instrument approaches expected to be executed during a 12-month period. See AC 150/5070-6, Chapter 7, Section 702.a. and Figure 7-2.		✓		
7. Number of enplanements	See AC 150/5070-6, Chapter 7, Section 702.a. and Figure 7-2.	✓			

Narrative Report					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
8. Critical Aircraft (also referred as “design aircraft” or “critical design aircraft)	The critical aircraft is the most demanding aircraft identified in the forecast that will use the airport. Federally funded projects require that the critical aircraft will make substantial use of the airport in the planning period. Substantial use means either 500 or more annual itinerant operations or scheduled service. The critical aircraft may be a single aircraft or a composite of the most demanding characteristics of several aircraft. Provide the aircraft, AAC, and ADG. (e.g. Boeing 737-400, C-III) See AC 150/5300-13A, Paragraph 105(b) and FAA Order 5090.3C, 3-4.	✓			
9. Runway Design Code (RDC)	Describe the RDC for each runway. For the purpose of airport geometric design, each runway will contain a RDC which signifies the design standards to which the runway is to be built. The RDC consists of three parameters: Aircraft Approach Category (AAC), Airplane Design Group (ADG) and the approach visibility minimums. These parameters represent the aircraft that are intended to be accommodated by the airport, regardless of substantial use. See AC 150/5300-13A, Paragraph 105(c).	✓			
10. Runway Reference Code (RRC)	Describe the RRC for each runway. The RRC describes the current operational capabilities of a runway where no special operating procedures are necessary. The RRC consists of the same three components as the RDC, but is based on planned development and has no operational application. See AC 150/5300-13A, Paragraph 318.	✓			
C. Alternatives/Proposed Development		✓			

Narrative Report					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
11. Explanation of proposed development items	Specific projects can be described as project listings on a master table, on individual project data sheets, or in projects booklets.	✓			
12. Discuss near-term and future Approach Procedure Requirements or effects (e.g., LPV, Circling, etc.)	Based on existing or forecast usage. See FAA Order 7400.2, Figures 6-6-3 and 6-3-9.	✓			
13. Navigational Aids or Other Equipment Needs (e.g., Approach Lights, Wind Cones, AWOS, etc.)	The need for new or additional navigational aids is a function of the fleet mix, the percentage of time that poor weather conditions are present, and the cost to the users of not being able to use the airport while it is not accessible.	✓			
14. Wind coverage. Is it adequate for existing and future runway layouts? Has wind data been updated?	This analysis determines if additional runways are needed to provide the necessary wind coverage. Reference AC 150/5300-13A, Appendix 2 for guidance on wind coverage analysis techniques.	✓			
D. Modification to Standards.	Any approved nonconformance to FAA standards, other than dimensional standards for RSAs and OFZs, require FAA approval. A description of all approved modification to standards shall be provided. See AC 150/5300-13A, Paragraph 106(b) and FAA Order 5300.1.	✓			
E. Obstruction Surfaces (14 CFR Part 77 and Threshold Siting Surface)	Reference 14 CFR Part 77 and AC 150/5300-13A, Paragraph 303.	✓			
F. Runway Protection Zone	A description of any incompatible land uses inside the RPZ shall be provided. Prior to including new or modified land use in the RPZ, the Regional and ADO staff must consult with the National Airport Planning and Environmental Division, APP-400. This policy is exempt from existing land uses in the RPZ. See AC 150/5300-13A, Paragraph 310 and FAA memorandum dated September 27, 2012.	✓			

Narrative Report					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
G. Development summary (including sketches, schedules, and cost estimates) for stages of construction for: Development summary (including sketches, schedules, and cost estimates) for stages of construction for:	Documentation provided should include any electronic spreadsheets and files to facilitate in modifying the financial plan on an as-needed basis.	✓			
15. Development Projects Completed Since Last ALP		✓			
16. 0-5 years		✓			
17. 6-10 years		✓			
18. 11-20 years		✓			
H. Shadow or line-of-sight study for towered airports (negative or positive statements are required).	Reference FAA Order 6480.4. This can be from the Airway Facilities Tower Integration Laboratory (AFTIL) or simpler GIS-generated studies.	✓			
I. Letters of coordination with all levels of government, as needed.	Affected private and/or governmental groups, agencies, commissions, etc., that may have input on the plans. See AC 150/5070-6, Chapter 3.	✓			
J. Wildlife Hazard Management Issues Review (in narrative).	Reference AC 150/5200-33.	✓			
K. Preliminary Identification of Environmental Features	Potential or known features only. Further environmental analysis will be necessary. Reference FAA Order 5050.4B. Begin framework for NEPA analysis.	✓			
19. Major airport drainage ditches		✓			
20. Wetlands		✓			
21. Flood Zones		✓			
22. Historic or Cultural features		✓			
23. Section 4(f) features		✓			

Narrative Report					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
24. Flora/Fauna			✓		
25. Natural Resources			✓		
26. Etc. (other features identified in Order 5050.4B)			✓		
L. Note Action Items from Runway Safety Program Office	List and note status of items from Runway Safety Program Office or Runway Safety Action Plan.	✓			
M. Declared Distance (DD)	The narrative on declared distances is used to aid in understanding the maximum distances available and suitable for meeting takeoff, rejected takeoff, and landing distances performance requirements for turbine powered aircraft. The narrative shall also provide clarification on why declared distances have been implemented. Declared distances data must be listed for all runway ends. The TORA, TODA, ASDA, and LDA will be equal to the runway length in cases where a runway does not have displaced thresholds, stopways, or clearway, and have standard RSAs, ROFAs, RPZs, and TSS. Reference AC 150/5300-13A, Paragraph 323.	✓			
Remarks					

A.2. Title Sheet

- The scale of the Title Sheet should be developed to include the items listed below.
- The minimum size for the final drawing set is 22" X 34" (ANSI D) and 24" X 36" (ARCH D). Coordinate use of 34" x 44" (ANSI E) and 26" X 48" (ARCH E) with FAA. Color drawings may be acceptable if they are still usable if reproduced in grey scale.

Title Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Title and revision blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	✓			
B. Airport sponsor approval block	Provide an approval block for the sponsoring authority's representative to sign. Include space for name, title, and date.	✓			
C. Date of ALP (date the airport sponsor signs the ALP)	The month and year of signature prominently shown near the title.	✓			
D. Index of sheets (including revision date column)	Airport Layout Drawing, Airport Airspace Drawing, Inner Portion of the Approach Surface Drawing, Terminal Area Drawing, Land Use Drawing, Airport Property Map, Airport Departure Surface, etc.	✓			
E. State Aeronautics Agency Approval Block (as needed)	Provide an approval block for the sponsoring authority's representative to sign. Include space for name, title, and date.	✓			
F. State outline with county boundaries. County in which airport is located should be highlighted.	Provide as needed.	✓			
G. Location map (general area)		✓			
H. Vicinity map (specific airport area)		✓			
Remarks **Refer to Sheet 1.**					

A.3. Airport Data Sheet

- For smaller airports, some of the ALP sheets may be combined if practical and approved FAA.

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Title and Revision Blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	✓			
B. Wind Rose (all weather and IFR) with appropriate airport reference code and runway orientation depicted, crosswind coverage, and combined coverage, source of wind information and time period covered (for IFR runways applicable minimums should be included):	Assembly and analysis of wind data to determine ultimate runway orientation and also provides the operational impact of winds on existing runways. If instrument procedures are present or will be requested then both all-weather and instrument meteorological condition wind roses are required. See AC 150/5300-13A, Appendix 2.	✓			
1. 10.5, 13, 16, 20 knots wind rose (based on appropriate airport reference code)	When a runway orientation provides less than 95 percent wind coverage for any aircraft forecasted to use the airport on a regular basis, a crosswind runway is recommended. The 95 percent wind coverage is computed on the basis of the crosswind not exceeding 10.5 knots for Airport Reference Codes A-I and B-I, 13 knots for Airport Reference Codes A-II and B-II, 16 knots for Airport Reference Codes A-III, B-III, and C-I through D-III, and 20 knots for Airport Reference Codes A-IV through D-VI. See also AC 150/5300-13A, Paragraph 302(c)(3) and AC 150/5300-13A, Appendix 2.	✓			
2. Percentage of wind coverage/crosswind		✓			
3. Source of data	Wind data may be obtained from NOAA at http://www.ncdc.noaa.gov/ Reference AC 150/5300-13A, Appendix 2, Paragraph A2-5 and A2-6.	✓			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
4. Age of data (last 10 consecutive years of data with most current data no older than 10 years)	Data must be from the latest 10-year period from the reporting station closest to the airport. Reference AC 150/5300-13A, Appendix 2, Paragraph A2-5.	✓			
C. Airport Data Table					
1. ARC for Airport	List the Airport Reference Code (ARC) for airport. 5300-13AARC is an airport designation that signifies the airport's highest Runway Design Code (RDC), minus the third (visibility) component of the RDC. Reference AC 150/5300-13A.	✓			
2. Mean maximum temperature of hottest month	List the mean maximum temperature and the hottest month for the airport location as listed in "Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Degree-Days" (Climatography of the United States No. 81). See AC 150/5325-4, 506.b.	✓			
3. Airport elevation (highest point of the landing areas, nearest 0.1 foot) – using North American Vertical Datum of 1988 (NAVD88)	List the Airport Elevation, the highest point on an airport's usable runway expressed in feet above mean sea level (MSL). Use NAVD88. Reference AC 150/5300-13A, Paragraph 102(g) All elevations shall be in NAVD88. A note shall be put on the Airport Layout Drawing that denotes that the NAVD88 vertical control datum was used.	✓			
4. Airport Navigational Aids, including ownership (NDB, TVOR, ASR, Beacon, etc.)	List the electronic aids available at the airport.	✓			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
5. Airport reference point coordinates, nearest second (existing, future if appropriate, and ultimate) - NAD83	List the Airport Reference Point, the latitude and longitude of the approximate center of the airport. Use the North American Datum of 1983 (NAD83) coordinate system. See AC 150/5300-13A, Paragraph 207. All latitude/longitude coordinates shall be in NAD83. A note shall be put on the Airport Layout Drawing that denotes that the NAD83 coordinate system was used.	✓			
6. Miscellaneous facilities (taxiway lighting, lighted wind cone(s), AWOS, etc.) [Including type/model and any facility critical areas]	List any other facilities available at the airport.	✓			
7. Airport Reference Code and Critical Aircraft (existing & future)	List the existing and ultimate Airport Reference Code and Critical Aircraft, the most demanding aircraft identified in the forecast that will use the airport. Federally funded projects require that critical design airplanes have at least 500 or more annual itinerant operations at the airport (landings and takeoffs are considered as separate operations) for an individual airplane or a family grouping of airplanes. See AC 150/5325-4, 102.a.(8) and AC 150/5070-6, 702.a. Indicated dimensions for wingspan and undercarriage, along with approach speed.	✓			
8. Airport magnetic variation, date and source	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	✓			
9. NPIAS service level (GA, RL, P, CS, etc.)	See FAA Order 5090.3C.	✓			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
10. State equivalent service role	As applicable pursuant to State Aviation Department System Plan.	✓			
D. Runway Data Table	The Runway Data Table should show information for both existing and ultimate runways.	✓			
1. Runway identification (Include identifying runways that are “utility”)	A column for each runway end should be present. List the runway end number and if pavement strength is less than 12,500 pounds (single-wheel), then note as utility.	✓			
2. Runway Design Code (RDC)	5300-13AThe first component, depicted by a letter, is the AAC and relates to aircraft approach speed (operational characteristics). The second component, depicted by a Roman numeral, is the ADG and relates to either the aircraft wingspan or tail height (physical characteristics); whichever is more restrictive. The third component relates to the visibility minimums expressed by RVR values in feet of 1200, 1600, 2400, and 4000. List the RDC for each runway. See AC 150/5300-13A, Paragraph 105(c).	✓			
3. Runway Reference Code (RRC)	The RRC describes the current operational capabilities of a runway where no special operating procedures are necessary. Like the RDC, it is composed of three components: AAC, ADG, and visibility minimums. List the RRC for each Runway. See AC 150/5300-13A, Paragraph 318.	✓			
4. Pavement Strength & Material Type	Indicate the runway surface material type, e.g., turf, asphalt, concrete, water, etc.	✓			
a. Strength by wheel loading	List the existing and ultimate design strength of the landing surface. See AC 150/5320-6, Chapter 3.	✓			
b. Strength by PCN	See AC 150/5335-5.	✓			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
c. Surface treatment	Note any surface treatment: grooved, PFC, etc.	✓			
5. Effective Runway Gradient (%) Author to note maximum grade within runway length. Note to included statement that the runway meets line of sight requirements	List the maximum longitudinal grade of each runway centerline. See AC 150/5300-13A, Paragraph 313.	✓			
6. Percent (%) Wind Coverage (each runway)	List the percent wind coverage for each runway for each Aircraft Approach Category. See AC 150/5300-13A, Appendix 2.	✓			
7. Runway dimensions (length and width)	Dimensions determined for the Critical Design Aircraft by using graphical information in AC 150/5325-4.	✓			
8. Displaced Threshold	Provide the pavement elevation of the runway pavement at any displaced threshold. See AC 150/5300-13A, Paragraph 303(2).	✓			
9. Runway safety area dimensions (actual existing and design standard)	List the existing and ultimate dimensions of the Runway Safety Area (RSA). See AC 150/5300-13A, Paragraph 307.	✓			
10. Runway end coordinates (NAD83) (include displaced threshold coordinates, if applicable) to the nearest 0.01 second and 0.1 foot of elevation.	Show the latitude and longitude of the threshold center and end of pavement (if different) to the nearest .01 of a second and 0.1 foot of elevation.	✓			
11. Runway lighting type (LIRL, MIRL, HIRL)	List the existing and ultimate type of runway lighting system for each runway, e.g., Reflectors, Low Intensity Runway Lighting (LIRL), Medium Intensity Runway Lighting (MIRL), or High Intensity Runway Lighting (HIRL). LIRLs will typically not be shown for new systems. See AC 150/5340-30, Ch. 2.	✓			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
12. Runway Protection Zone (RPZ) Dimensions	List the existing and ultimate Runway Protection Zone (RPZ) dimensions. See AC 150/5300-13A, Paragraph 310. Prior to including new or modified land use in the RPZ, the Regional and ADO staff must consult with the National Airport Planning and Environmental Division, APP-400. This policy is exempt from existing land uses in the RPZ. See AC 150/5300-13A, Paragraph 310 and FAA memorandum dated September 27, 2012.	✓			
13. Runway marking type (visual or basic, non-precision, precision)	Indicate the existing and ultimate pavement markings for each runway. See AC 150/5340-1, Section 2.	✓			
14. 14 CFR Part 77 approach category (50:1; 34:1; 20:1) Existing and Future	List the existing and ultimate approach surface slope. See FAA Order 7400.2, Figures 6-6-3 and 6-3-9.	✓			
15. Approach Type (precision, non-precision, visual)	List the existing and ultimate Part 77 Approach Use Types. See FAA Order 7400.2, Figures 6-6-3 and 6-3-9.	✓			
16. Visibility minimums (existing and future)	List the existing and ultimate visibility minimums for each runway. See AC 150/5300-13A, Table 1-3.	✓			
17. Type of Aeronautical Survey Required for Approach (Vertically Guided, not Vert. Guided)	List the type of aeronautical survey required for the visibility minimums given. See AC 150/5300-18, Section 2.7 and AC 150/5300-13A, Table 3-4 and Table 3-5.	✓			
18. Runway Departure Surface (Yes or N/A)"	Determine applicability of 40:1 Departure Obstacle Clearance Surface (OCS) as defined in Paragraph 303(c) of AC 150/5300-13A.	✓			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
19. Runway Object Free Area	List the existing and ultimate dimensions of the Runway Object Free Area (OFA). See AC 150/5300-13A, Paragraph 309. Objects non-essential for air navigation or aircraft ground maneuvering purposes must not be placed in the ROFA, unless a modification to standard has been approved.	✓			
20. Obstacle Free Zone	The OFZ clearing standard precludes aircraft and other object penetrations, except for frangible NAVAIDs that need to be located in the OFZ because of their function. Modification to standards does not apply to the OFZ. List the Runway OFZ, Inner-approach OFZ, Inner-transitional OFZ, and Precision OFZ if applicable.	✓			
21. Threshold siting surface (TSS)	List the existing and ultimate threshold siting surface (i.e. approach and departure surfaces). Identify any objects penetrating the surface. If none, state “No TSS Penetrations”. Reference AC 150/5300-13A, Paragraph 303.	✓			
22. Visual and instrument NAVAIDs (Localizer, GS, PAPI, etc.)	List the existing and ultimate visual navigational aids serving each runway.	✓			
23. Touchdown Zone Elevation	List the highest runway centerline elevation in the existing and ultimate first 3000 feet from landing threshold. See FAA Order 8260.3, Appendix 1.	✓			
23. Taxiway and Taxilane width	List the existing and ultimate width of the taxiways and taxilane. Reference AC 150/5300-13A, Paragraph 403 and Table 4-2.	✓			
24. Taxiway and Taxilane Safety Area dimensions	List the existing and ultimate taxiway and taxilane safety area dimensions. Reference AC 150/5300-13A, Paragraph 404(c) and Table 4-1.	✓			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
25. Taxiway and Taxilane Object Free Area	List the existing and ultimate taxiway and taxilane object free area dimensions. Reference AC 150/5300-13A, Paragraph 404(b) and Table 4-1.	✓			
26. Taxiway and Taxilane Separation	List any objects located inside the Taxiway/Taxilane Safety Area and Taxiway/Taxilane Object Free Area. Also provide the distance from the taxiway/taxilane centerline to the fix ed or movable object. Reference Paragraph 404(a) and Table 4-1.	✓			
27. Taxiway/Taxilane lighting	List the existing and ultimate type of taxiway lighting system, e.g., Reflectors, Low Intensity Taxiway Lighting (LITL), Medium Intensity Taxiway Lighting (MITL), or High Intensity Taxiway Lighting (HITL). LITLs will typically not be shown for new systems. See AC 150/5340-30, Chapter 4.	✓			
28. Identify the vertical and horizontal datum	All latitude/longitude coordinates shall be in North American Datum of 1983 (NAD 83). A note shall be put on the Airport Layout Drawing that denotes that the NAD 83 coordinate system was used. All elevations shall be NAVD88. A note shall be put on the Airport Layout Drawing that denotes that the NAVD88 vertical control datum was used.	✓			
E. Modification to Standards Approval Table (if applicable, a separate written request, including justification, should accompany the modification to standards). Show: Approval Date/ Airspace Case No. / Standard to be Modified / Description	Provide a table to list all FAA approved Modifications to Standards. See AC 150/5300-13A, Paragraph 106(b), and FAA Order 5300.1. List “None Required” on the table if no Modifications have yet been proposed or approved.	✓			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
F. Declared Distances Table	Required even if Declared Distances are not in effect. Declared distances are only to be used for runways with turbine-powered aircraft. The TORA, TODA, ASDA, and LDA will be equal to the runway length in cases where a runway does not have displaced thresholds, stopways, or clearways, and have standard RSAs, ROFAs, RPZs, and TSS. Reference AC 150/5300-13A, Paragraph 323.	✓			
1. Take Off Run Available (TORA)	List the runway length declared available and suitable for the ground run of an airplane taking off, i.e., Take Off Run Available (TORA). The TORA may be reduced such that it ends prior to the runway to resolve incompatible land uses in the departure RPZ, and/or to mitigate environmental effects. Reference AC 150/5300-13A, Paragraph 323(d)(1).	✓			
2. Take Off Distance Available (TODA)	List the length of remaining runway or clearway (CWY) beyond the far end of the TORA ADDED TO the TORA. The resulting sum is the Take Off Distance Available (TODA) for the runway. The TODA may be reduced to mitigate penetrations to the 40:1 instrument departure surface, if applicable. The TODA may also extend beyond the runway end through the use of a clearway Reference AC 150/5300-13A, Paragraph 323(d)(2).	✓			
3. Accelerate Stop Distance Available (ASDA)	5300-13A List the length the length of runway plus stopway (if any) declared available and suitable for satisfying accelerate-stop distance requirements for a rejected takeoff. Additional RSA and ROFA can be obtained by reducing the ASDA. Reference AC 150/5300-13A, Paragraph 323(d)(3).	✓			

Airport Data Sheet					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
4. Landing Distance Available (LDA)	5300-13A List the length of runway declared available and suitable for satisfying landing distance requirements. The LDA may be reduced to satisfy the approach RPZ, RSA, and ROFA requirements. Reference AC 150/5300-13A, Paragraph 323(e).	✓			
G. Legend	Provide a Legend that identifies all symbols and line types used on the drawing. Lines must be clear and readable with sufficient scale and quality to discern details.	**1/**			
Remarks **Refer to Sheet 2.** **1/ Legend is provided on the Existing, Future, and Ultimate ALP drawings, Sheets 3, 4, and 5.**					

A.4. Airport Layout Plan Drawing

- For smaller airports, some of the ALP sheets may be combined if practical and approved by FAA.
- Two, or more, sheets may be necessary for clarity, existing and proposed. The reviewer should be able to differentiate between existing, future, and ultimate development. If clarity is an issue, some features of this drawing may be placed in tabular format. North should be pointed towards the top of the page or to the left. (scale 1"=200' to 1"=600')

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Title and Revision Blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	✓			
B. Space for the FAA approval stamp	Leave a blank four-inch by four-inch area for the FAA approval stamp.	✓			
C. Layout of existing and proposed facilities and features:	To assure full consideration of future airport development in 14 CFR Part 77 studies, airport owners must have their plans on file with the FAA. The necessary plan data includes, as a minimum, planned runway end coordinates, elevation, and type of approach for any new runway or runway extension. See AC 150/5300-13A, Paragraph 106.	✓			
1. True and magnetic North arrow with year of magnetic declination	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	✓			
2. Airport reference point – locate by symbol a Lat./Long. To nearest second (existing, future, and ultimate) NAD 83	List the Airport Reference Point, the latitude and longitude of the approximate center of the airport. Use the NAD 83 coordinate system. See AC 150/5300-13A, Paragraph 207.	✓			
3. Wind cones, segmented circle, beacon, AWOS, etc.	Show as applicable pursuant to AC 150/5300-13A, Chapter 6.	✓			

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
4. Contours (showing only significant terrain differences)	Topography, budget, and future uses of the base mapping, will dictate what intervals of topographical contours to use on the maps. Topographic issues may be important in the alternatives analysis, which may require that reduced contour intervals be used. See AC 150/5070-6, 1005.	✓			
5. Elevations: All NAVD88	All latitude/longitude coordinates shall be in NAD83/NAVD88.	✓			
a. Runway – existing, future, and ultimate ends (nearest 0.1 ft.)	Show the latitude and longitude of the threshold center and end of pavement.	✓			
b. Touchdown Zone Elevation (highest point in first 3,000 ft. of runway)	List the highest runway centerline elevation in the existing and ultimate first 3000 feet from landing threshold. See FAA Order 8260.3, Appendix 1.	✓			
c. Runway high/low points (existing and future)	For all runways identify high and low points (centerline) and provide elevation information.	✓			
d. Label runway/runway intersection elevations	Label the pavement elevation of runway intersections where the centerlines cross.			✓	
e. Displaced Thresholds (if any)	Label the pavement elevation and coordinates of the runway pavement at any displaced threshold. See AC 150/5300-13A, Paragraph 303(a)(2).	✓			
f. Roadways & Railroads (where they intersect Approach surfaces, the extended runway centerline, and at the most critical points)	Provide elevation information for the traverse ways' centerline elevation where they intersect the Part 77 Approach surfaces (existing and ultimate). Note whether this elevation is the actual elevation or the traverseway elevation plus the traverseway adjustment (23' for railways, 17' for interstate highways, 15' for other public roads, or 10' for private roads). See also 14 CFR Part 77.	✓			

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
g. Structures, Buildings, and Facilities	All buildings on the Airport Layout Drawing should be identified by an alphanumeric character. List these identifiers in a table and give a description of the building. If no Terminal Area drawing is done, also include the top of structure elevation in MSL. If any of the structures violate any airport or approach surfaces give an ultimate disposition to remedy the violation. Don't forget navigation aid shelters, AWOS/ASOS, RVRs, PAPIs, Fueling systems, REILs, etc. Also identify the structure use (hangar, FBO, crew quarters, etc.), as needed. Some lesser objects may be identified by symbols in the legend.	✓			
h. Define features to include: trees streams, water bodies, etc.	Provide information and delineate trees, streams, water bodies, etc., on or near airport property and approach surfaces.	✓			
6. Runway Details					
a. Runway Design – runway length, runway width, shoulder width, blast pad width, blast pad length, and cross wind component. (existing, future, and ultimate)	AC 150/5325-4 describes procedures for establishing the appropriate runway length. AC 150/5300-13A, Table 3-4 and Table 3-5 provides the minimum runway length. AC 150/5300-13A, Table 3-8 provides the standard dimensions of the runway width, shoulder width, blast pad width, blast pad length, and crosswind component based on RDC. Clearly denote the runway numbers at the thresholds. Show location of existing and future threshold lights.	✓			
b. Orientation – true bearing to nearest 0.01 second (and runway numbers)	Show the true bearing to the nearest .01 of a degree of the runway centerline.	✓			

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
c. End Coordinates – existing, future, and ultimate degrees, minutes, seconds (to the nearest 0.01 second)	Show the latitude and longitude of the threshold center and end of pavement (if different) to the nearest .01 of a second.	✓			
d. Runway Safety Areas (RSA) – actual, existing, future, and ultimate (including dimensions)	Show the extents of the existing and ultimate RSA 5300-13A. Reference AC 150/5300-13A, Paragraph 307.	✓			
e. Runway Object Free Areas (ROFA)	Show the extents of the existing and ultimate ROFA. Reference AC 150/5300-13A, Paragraph 309.	✓			
f. Precision Obstacle Free Zone (POFZ)	Show the extents of the existing and ultimate POFZ. Reference AC 150/5300-13A, Paragraph 308(d).	✓			
g. Obstacle Free Zone (OFZ)	Show the extents of the existing and ultimate OFZ. Reference AC 150/5300-13A, Paragraph 308.	✓			
h. Clearways and Stopways	Show any/all clearways and stopways/overruns and the markings used to denote these areas. See AC 150/5300-13A, Paragraph 311 and 312; and AC 150/5340-1, Section 2, Paragraph 14.			✓	
i. Runway Protection Zone (RPZ) - Dimensions (existing, future, and ultimate)	Show existing and ultimate RPZ. See AC 150/5300-13A, Paragraph 310. Show the existing and ultimate protective area/zone type of ownership. Identify any incompatible objects and activities inside the RPZ. Prior to including new or modified land use in the RPZ, the Regional and ADO staff must consult with the National Airport Planning and Environmental Division, APP-400. This policy is exempt from existing land uses in the RPZ. See AC 150/5300-13A, Paragraph 310 and FAA memorandum dated September 27, 2012.	✓			

Airport Layout Plan Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
j. 14 CFR Part 77 Approach Surfaces	Show the portion of the existing and ultimate approach surfaces that are over airport and adjacent property and identify the approach surface dimensions and slope. See FAA Order 7400.2, Figure 6-3-9.	✓			
k. Threshold Siting Criteria: Approach/Departure Surface (existing, future, and ultimate) 5300-13A	Determine and identify pursuant to AC 150/5300-13A, Paragraph 303(b) and 303(c).	✓			
l. Terminal Instrument Procedures (TERPS)surface and TERPS GQS, if applicable.	Determine and identify pursuant to AC 150/5300-13A, Paragraph 303(a)(4)(a), Table 3-4, and Table 3-5. Reference FAA Order 8260.3.	✓			
m. Navigation Aids (NAVAIDS) – PAPI, ILS, GS, LOC, ALS, MALSR, REIL, etc., (plus facility critical area's)	Show all NAVAIDS and provide clearance distances from runways, taxiways, etc. Reference AC 150/5300-13A, Chapter 6.	✓			
n. Marking – thresholds, hold lines, etc.	Show on the runway the type and location of markings, existing and ultimate. See AC 150/5340-1, Section 2.	✓			
o. Displaced threshold coordinates and elevation	Show the latitude, longitude, and the pavement elevation of the runway pavement at any displaced threshold. See AC 150/5300-13A, Paragraph 303(a)(2).5300-13A.	✓			
p. Runway centerline separation distances	Show the runway centerline separation distances to parallel runway centerline, holding position, parallel taxiway/taxilane centerline, aircraft parking area, and helicopter touchdown pad, if applicable. Reference AC 150/5300-13A, Paragraph 321 and Table 3-8.	✓			
7. Taxiway Details	Show the taxiway centerline separation distances to parallel taxiway/taxilane centerlines, fixed or movable objects.	✓			

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
a. Dimensions – width (existing & ultimate)	Taxiway width based on Taxiway Design Group (TDG). See AC 150/5300-13A, Table 4-2.	✓			
b. Taxiway Edge Safety Margin (TESM)	TESM dimension based on TDG. See AC 150/5300-13A, Table 4-2.	**2/**			
c. Taxiway Shoulder Width	Taxiway shoulder width based on TDG. See AC 150/5300-13A, Table 4-2.	**2/**			
d. Taxiway/Taxilane Object Free Area (TOFA)	TOFA width based on Taxiway Design Group (TDG). TOFA extend the entire length of taxiway. See AC 150/5300-13A, Table 4-1.	**2/**			
e. Taxiway/Taxilane Safety Area (TSA)	TSA width based on TDG. TSA extend the entire length of taxiway. See AC 150/5300-13A, Table 4-1.	**2/**			
f. Taxiway/Taxilane Centerline Separation from:					
i. Runway centerline	Show the distance from centerline of runway to centerline of taxiway. See AC 150/5300-13A, Table 4-1.	✓			
ii. Parallel taxiway	Show the distance from centerline of taxiway to centerline of parallel taxiway. See AC 150/5300-13A, Table 4-1.	✓			
iii. Aircraft parking	Show the distance from centerline of taxiway to marked aircraft parking/tie downs. See AC 150/5300-13A, Table 4-1.	✓			
iv. Fixed or Movable Objects	Show the distance from centerline of taxiway to airport objects such as buildings, facilities, poles, etc. See AC 150/5300-13A, Table 4-1.	✓			
8. Fences (identify height)	Show the location of existing and ultimate fences and identify height.	✓			

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
9. Aprons					
a. Dimensions (square footage, dimension, or length and width)	Include dimensions of apron and distance from runway and taxiway centerlines. Apron should be sized using activity forecast and the apron design spreadsheet. See AC 150/5300-13A, Chapter 5 and FAA Engineering Brief No. 75.	**3/**			
b. Identify aircraft tie-down layout	Show proposed tie-down layout on the apron area. See AC 150/5300-13A, Figure A5-1, AC 20-35, and AC 150/5340-1.	**3/**			
c. Identify Special Use Areas (e.g., deicing or aerial application areas on or near apron)	Show as applicable and pursuant to representative ACs.			✓	
10. Roads	Label all roads.	✓			
11. Legend	Provide a Legend that identifies all symbols and line types used on the drawing. Lines must be clear and readable with sufficient scale and quality to discern details.	✓			
12. Items to be identified with distinct line types	Use distinct line types to identify different items and differentiate between existing and ultimate.	✓			
a. NAVAID Critical Areas (Glide Slope, Localizer, AWOS, ASOS, VOR, RVR, etc.)	Show the critical area outline for all Instrument Landing System and other electronic Navigational Aids located on the airport. See AC 150/5300-13A, Chapter 6 for general guidance and FAA Order 5750.16 for critical area dimensions.	✓			
b. Building Restriction Lines 5300-13A(BRL)	The BRL is the line indicating where airport buildings must not be located, limiting building proximity to aircraft movement areas. See AC 150/5300-13A, Paragraph 213(a).	✓			
c. Runway Visibility Zone (RVZ)	Show the RVZ for the existing and ultimate airport configurations. See AC 150/5300-13A, 305(c).			✓	

Airport Layout Plan Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
d. Airport Property Lines and Easements (existing, future, and ultimate)	Show the airport property boundaries, including easements, for the existing and ultimate airport configurations.	✓			
13. Survey Documentation					
a. Survey Monuments (PACS/SACS, see AC 150/5300-16)	Show the location of all established survey monuments located on or near the airport property. Identify Primary and Secondary Airport Control Stations (PACS/SACS) if they exist. See AC 150/5300-16. Show the location of all section corners on or near the airport property.	✓			
b. Offsets, stations, etc.	Show as applicable.			✓	
14. Any Air Traffic Control Tower (ATCT) line of sight/shadow study areas (use separate sheet if necessary)	Reference FAA Order 6480.4.	✓			
15. General Aviation development area (e.g., fuel facilities, FBO, hangars, etc.) – greater detail can be shown on the terminal area drawing	Show as applicable.	**3/**			
16. Facilities and movement areas that are to be phased out, if any, are described	Show as applicable.	✓			

Remarks

Refer to Existing, Future, and Ultimate ALP drawings, Sheets 3, 4, and 5.

2/ Refer to Future and Ultimate Taxiway Data Tables on Sheet 2.

3/ Refer to Terminal Area Plan on Sheet 11.

A.5. Airport Airspace Drawing

- A required drawing.
- Scale 1" = 2000' plan view, 1" = 1000' approach profiles, 1"=100' (vertical) for approach profiles.
- 14 CFR Part 77, Objects Affecting Navigable Airspace, defines this as a drawing depicting obstacle identification surfaces for the full extent of all airport development. It should also depict airspace obstructions for the portions of the surfaces excluded from the Inner Portion of the Approach Surface Drawing.

Airport Airspace Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
A. Title and Revision Block	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	✓			
B. Plan view (based on ultimate runway lengths) Include location of water or sewage facilities if inside horizontal surface.					
1. U.S. Geological Survey (USGS) Quad Sheet for base map	Use the most current USGS Quadrangle(s) as a base map for the airspace drawing.		✓		
2. Runway end numbers	Show the ultimate runways and runway numbers. Contact the FAA before renumbering existing runways.	✓			
3. Part 77 Surfaces (Horizontal, Conical, Transition, based on ultimate). Including elevations at the point where surfaces change.	Show the extents of the Part 77 imaginary surfaces. For airports that have precision approach runways show balance of the 40,000' approach on a second sheet, if necessary. See 14 CFR Part 77.19.	✓			
4. 50' elevation contours on sloping surfaces (NAVD88)	Show contour lines on all sloping Part 77 imaginary surfaces. See 14 CFR Part 77.19.	✓			
5. Top elevations of penetrating objects for the inner portion of the approach surface drawing	Identify by unique alphanumeric symbol all objects beyond the Runway Protection Zones that penetrate any of the Part 77 surfaces. See 14 CFR Part 77.	✓			
6. Note specifying height restriction (ordinances/statutes)	List any local zoning restrictions that are in place to protect the airport and surrounding airspace. See AC 150/5190-4.	✓			
7. North Arrow with	Magnetic declination may be				

Airport Airspace Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
magnetic declination and year	calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	✓			
C. Profile view					
1. Airport Elevation	List the Airport Elevation, the highest point on an airport's usable runway expressed in feet above mean sea level (MSL). Use NAVD88 datum. See AC 150/5300-13A, Chapter 1, Paragraph 102(g).	✓			
2. Composite Ground Profile along extended Runway Centerline (Representing the composite profile, based on the highest terrain across the width and along the length of the approach surface)	Depict the ground profile along the extended runway centerline representing the composite profile, based on the highest terrain across the width and along the length of the approach surface.	✓			
3. Significant objects (bluffs, rivers, roads, schools, towers, etc.) and elevations	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions. Use the objects' same alphanumeric identifier that was used on the plan view. Identify the top elevations of all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions.	✓			
4. Existing, future, and ultimate runway ends and approach slopes	Show existing and ultimate runway ends and FAR Part 77 approach surface slopes. See 14 CFR Part 77.19.	✓			
D. Obstruction Data Tables (identify obstacles not depicted on the Inner Portion of the Approach Surface Drawing)					
1. Object identification number	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach	✓			

Airport Airspace Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
	surfaces, regardless of whether or not they are obstructions. Use the objects alphanumeric identifier that was used on the plan view. Identify the top elevations of all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions.				
2. Description	Provide a brief description of the object, e.g., Power Pole, Cell Tower, Natural Gas Flare, etc.	✓			
3. Date of Obstruction Survey	Provide the date of latest obstruction survey.	✓			
4. Ground Surface Elevation	Provide the ground surface elevation (MSL) at the base of each object.	✓			
5. Object Elevation	List the above ground level (AGL) height and the top of object elevation (above mean sea level / AMSL / MSL) for each object.	✓			
6. Amount of surface penetration	List the surface that is penetrated and the amount the object protrudes above the surface. See 14 CFR Part 77.	✓			
7. Proposed or existing disposition of the obstruction	Provide a proposed or existing disposition of the object to remedy the penetration. See AC 70/7460-1.	✓			
a. Proposed Disposition (existing)					
b. Proposed Disposition (future)					
Remarks: **Refer to 14 CFR Part 77 Airport Airspace Drawings on Sheets 6 and 7.** **Local zoning ordinance are established under Key West, Code of Ordinances Sec. 122 - 1438.**					

A.6. Inner Portion of the Approach Surface Drawing

- A required drawing.
- Scale 1"=200' Horizontal, 1"=20' Vertical, two sheets may be necessary for clarity. Typically, the plan view is on the top half of the drawing and the profile view is on the bottom half. Views should be drawn from the runway threshold to a point on the approach slope 100 feet above the runway threshold elevation, at a minimum, or the limits of the RPZ, whichever is further.
- Drawings containing the plan and profile view of the inner portion of the approach surface to the runway and a tabular listing of all surface penetrations. The drawing will depict the obstacle identification approach surfaces contained in 14 CFR Part 77, Objects Affecting Navigable Airspace. The drawing may also depict other surfaces, including the threshold-siting surface, Glideslope Qualification Surface (GQS), those surfaces associated with United States Standards for Instrument Procedures (TERPS), or those required by the local FAA office or state agency. The extent of the approach surface and the number of airspace obstructions shown may restrict each sheet to only one runway end or approach.

Inner Portion of the Approach Surface Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Title and Revision Block	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	✓			
B. Plan View (existing, future, and ultimate)					
1. Inner portion of approach surface	Show the area from the runway threshold out to where the ultimate approach surface slope is 100 feet above the threshold elevation.	✓			
2. Aerial photo for base map	Use an aerial photograph for the base map.	✓			
3. Objects (identified by numbers)	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions using an alphanumeric character.	✓			
4. Property line within approaches	Show the property lines that are within the area/portion of airport shown.	✓			

Inner Portion of the Approach Surface Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
5. Road & railroad elevations, plus movable object heights	Provide elevation information for the traverse ways' centerline elevation where they intersect the Part 77 Approach surfaces (existing and ultimate). Note whether this elevation is the actual elevation or the traverse way elevation plus the traverse way adjustment (23' for railways, 17' for interstate highways, 15' for other public roads, or 10' for private roads). See also 14 CFR Part 77.	✓			
6. Part 77 Approach Surface clearance over Roads and Railroads at the most critical points, the Centerline and Edge of the surface.	Provide elevation information for the traverse ways where they intersect the edges and centerline of the Part 77 Approach surfaces (existing and ultimate). Note whether this elevation is the actual elevation or the traverseway elevation plus the traverseway adjustment (23' for railways, 17' for interstate highways, 15' for other public roads, or 10' for private roads). See also 14 CFR Part 77.	✓			
7. Physical end of runway, end number, elevation (NAVD88) Nearest 0.1 foot	Show the existing and ultimate runway end, runway number, and the elevation of the threshold center.	✓			
8. Airport Design Surfaces					
a. Runway Safety Area	Show the extents of the existing and ultimate Runway Safety Area (RSA). See AC 150/5300-13A, Paragraph 307 and Table 3-8.	✓			
b. Runway Object Free Area	Show the extents of the existing and ultimate Object Free Area (OFA). See AC 150/5300-13A, Paragraph 309 and Table 3-8.	✓			
c. Runway Obstacle Free Zone (OFZ)	Show the extents of the existing and ultimate OFZ which includes the inner-approach OFZ, inner-transitional OFZ, and the Precision OFZ (POFZ), if applicable. See AC 150/5300-13A, Paragraph 308.	✓			

Inner Portion of the Approach Surface Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
d. Runway Protection Zone (RPZ)	Show the extents of the existing and ultimate RPZ. Prior to including new or modified land use in the RPZ, the Regional and ADO staff must consult with the National Airport Planning and Environmental Division, APP-400. This policy is exempt from existing land uses in the RPZ. See AC 150/5300-13A, Paragraph 310, Table 3-5 and FAA memorandum dated September 27, 2012.	✓			
e. NAVAID critical area	Show the critical area outline for all Instrument Landing System and other electronic Navigational Aids located on the airport. See AC 150/5300-13A, Chapter 6 for general guidance and FAA Order 5750.16 for critical area dimensions.	✓			
9. Ground contours	Show ground contour lines in 2', 5', or 10' intervals. Topographic issues may be important in the alternatives analysis, which may require that reduced contour intervals be used. See AC 150/5070-6, Paragraph 1005.	✓			
10. North arrow with magnetic declination and year	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, Chapter 2, Section 5, for further information.	✓			
C. Profile view					
1. Existing and proposed runway centerline ground profile (list elevations at runway ends & at all points of grade changes) (representing the composite profile based on the highest terrain across the width and along the length of the approach surface)	Depict the ground profile along the extended runway centerline representing the composite profile, based on the highest terrain across the width and along the length of the approach surface to where the ultimate approach surface slope is 100 feet above the threshold elevation. A more effective presentation may be a rendering of a composite critical profile.	✓			

Inner Portion of the Approach Surface Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
2. Future development from plan view	Identify future development using same alphanumeric identifier that was used on the plan view.	✓			
3. Part 77 Approach/transition surface; existing and future VASI/PAPI siting surface	Show the boundaries of the existing and ultimate Part 77 Approach Surface. See FAA Order 7400.2, Figure 6-3-9, See also 14 CFR Part 77.	✓			
4. Threshold Siting Surface	Depict any applicable siting requirements pursuant to Table 3-2 of FAA AC 150/5300-13A.	✓			
5. Terrain in approach area (fences, streams, etc.)	Show all significant terrain(fences, streams, mountains, etc.) within the approach surfaces, regardless of whether or not they are obstructions	✓			
6. Objects – identify the controlling object (same numbers as plan view)	Show all significant objects (roads, rivers, railroads, towers, sign and power poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions. Identify the objects using same alphanumeric identifier that was used on the plan view.	✓			
7. Cross section of road & railroad	Show the cross-section of any roads and/or railroads that cross the area shown. Indicate cross section elevations of roads and railroads at edges and extended centerlines that cross the area shown.	✓			
8. Existing and proposed property and easement lines	Show the airport property boundaries, including easements, for the existing and ultimate airport configurations. AC 5300-13A Note easements for pipelines and residential through the fence gateways.	✓			
D. Obstruction tables for each approach surface (surface should be identified)	A separate table for each runway end must be used to enhance information clarity.	✓			
1. Object identification number	List each object by the same alphanumeric symbol used in the plan view.	✓			

Inner Portion of the Approach Surface Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
2. Description	Provide a brief description of the object, e.g., Power Pole, Cell Tower, Natural Gas Flare, etc.	✓			
3. Date of Obstruction Survey and Survey Accuracy	Provide the date of latest obstruction survey.	✓			
4. Surface Penetrations	5300-13A For any object that penetrates the Part 77 surface, the approach surface, or the obstacle free zone, describe the vertical length the object protrudes.	✓			
5. Proposed disposition of surface penetrations	Provide a proposed disposition of the object to remedy the penetration as described in item 4 above. See AC 70/7460-1 for Part 77 violations. "Removal" and/or "Lower" should be listed for any Airports safety area/zone violations. See AC 150/5300-13A, Paragraph 303 and 308.	✓			
6. Object elevation	List the Above Ground Level (AGL) height and the top of object elevation in MSL for each object.	✓			
7. Triggering Event (e.g., a runway extension) – Timeframe/expected date for removal	List the surface that is penetrated and the amount the object protrudes above the surface. See 14 CFR Part 77 and AC 150/5300-13A, Paragraphs 303 and 308.	✓			
8. Allowable approach surface elevation (if applicable)				✓	
9. Amount of approach surface penetration (if applicable)		✓			
10. Proposed disposition of approach surface obstruction (if applicable)	Provide a proposed disposition of the object to remedy the penetration. See AC 70/7460-1 for Part 77 violations. "Removal" and/or "Lower" should be listed for any Airports safety area/zone violations. See AC 150/5300-13A, Paragraph 303.	✓			

Inner Portion of the Approach Surface Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
11. Obstacle Free Zone (OFZ)	Determine and depict the applicable OFZ surfaces, see AC 150/5300-13A, Paragraph 308. Provide a proposed disposition of the object to remedy the penetration. Note: Modification to the OFZ standard is not permitted.	**4/**			
E. Runway Centerline Profile	This may be shown on the Inner Portion of the Approach Surface drawing if there is space to show the runway and Runway Safety Area in sufficient detail otherwise a separate sheet may be necessary. At a minimum this drawing is to show the full length of the runway and Runway Safety Area including: runway elevations, runway and Runway Safety Area gradients, all vertical curves, and a line representing the 5' line-of-sight. See AC 150/5300-13A, Paragraph 305.	✓			
1. Scale	The vertical scale of this drawing must be able to show the separation of the runway surface and the 5' Line-of-Sight line. See AC 150/5300-13A, Paragraph 305.	✓			
2. Elevation	Show runway elevations, runway and Runway Safety Area gradients, and all vertical curve data. See AC 150/5300-13A, Paragraph 318.	✓			
3. Line of Sight	The vertical scale of this drawing must be able to show the separation of the runway surface and the 5' Line-of-Sight line. See AC 150/5300-13A, Section 305.		✓		
Remarks **4/ Approximately 1,325 linear feet of airport fence is located within the Object Free Zone (OFZ)** **Refer to Inner Portion of the Approach Surface Drawings on Sheets 9 and 10.**					

A.7. Runway Departure Surface Drawing

- Required where applicable. For each runway that is designated for instrument departures.
- This drawing depicts the applicable departure surfaces as defined in Paragraph 303 of FAA AC 150/5300-13A. The surfaces are shown for runway end(s) designated for instrument departures.
- 40:1 for Instrument Procedure Runways (Scale, 1" = 1000' Horizontal, 1" = 100' Vertical, Out to 10,200' beyond Runway threshold) 62.5:1 for Commercial Service Runways (Scale, 1" = 2000' Horizontal, 1" = 100' Vertical, Out to 50,000' beyond Runway threshold).
- Contact the FAA if the scale does not allow the entire area to fit on a single sheet. The depiction of the One Engine Inoperative (OEI) surface is optional; it is not currently required.

Runway Departure Surface Drawing					
Item	Instructions	Sponsor/Consultant			FAA
		Yes	No	N/A	
A. Title and Revision Blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.		**5/**		
B. Plan view (existing & future)	See AC 150/5300-13A, Paragraph 303(c).		**5/**		
1. Aerial Photo for base map	Use an aerial photograph for the base map. A USGS 7.5 minute series map is also acceptable.		**5/**		
2. Runway end numbers and elevations (nearest 1/10 of a foot)	Show the existing and ultimate runway end, runway number, and the elevation of the threshold center. For runways that have a clearway, depict this surface and the relocated departure surface. Reference AC 150/5300-13A, Paragraph 303(c)(1).		**5/**		
3. 50' elevation contours on sloping surfaces (NAVD88)	Show contour lines on the Part 77 imaginary surfaces. See 14 CFR Part 77.19.		**5/**		
4. Depict property line, including easements	Show the property line(s) that are within the area/portion of airport shown.		**5/**		
5. Identify, by numbers, all traverse ways with elevations and computed vertical clearance in the departure surface	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the departure surfaces, regardless of whether or not they are obstructions using unique alphanumeric characters.		**5/**		

Runway Departure Surface Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
6. Ground contours	Show ground contour lines in 2', 5', or 10' intervals. Topographic issues may be important in the alternatives analysis, which may require that reduced contour intervals be used.		**5/**		
C. Profile view (existing & future)					
1. Ground profile	Depict the ground profile along the extended runway centerline representing the composite profile, based on the highest terrain across the width and along the length of the departure surface to extents of the surface dimensions.		**5/**		
2. Significant objects (bluffs, rivers, roads, buildings, fences, structures, etc.)	Show all significant objects (roads, rivers, railroads, towers, poles, etc.) within the approach surfaces, regardless of whether or not they are obstructions using an alphanumeric character.		**5/**		
3. Identify obstructions with numbers on the plan view	Identify the objects using same alphanumeric identifier that was used on the plan view.		**5/**		
4. Show roads and railroads with dashed lines at edge of the departure surface	Show the cross-section of any roads and/or railroads that cross the area shown.		**5/**		
D. Obstruction Data Tables					
1. Object identification number	Identify all significant objects (roads, rivers, railroads, towers, poles, etc.) within the departure surfaces, regardless of whether or not they are obstructions using unique alphanumeric characters. List each object by the same alphanumeric symbol used in the plan view.		**5/**		
2. Description	Provide a brief description of the object, e.g., Power Pole, Cell Tower, Tree, Natural Gas Flare, etc.		**5/**		
3. Object Elevation	List the Above Ground Level (AGL) height and the top of object elevation in MSL for each object.		**5/**		

Runway Departure Surface Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
4. Amount of surface penetration	List the object protrudes above the departure surface. See AC 150/5300-13A, Paragraph 303(c).		**5/**		
5. Proposed or existing disposition of the obstruction	Provide a proposed disposition of the object to remedy the penetration. See AC 150/5300-13A, Paragraph 303(c).		**5/**		
6. Separate table for each departure surface	A separate table for each runway end must be used to enhance information clarity.		**5/**		
Remarks **5/ Refer to Inner Portion of the Approach Surface Drawings on Sheets 9 and 10.**					

A.8. Terminal Area Drawing

- Scale 1”=50’ or 1”=100’. Plan view of aprons, buildings, hangars, parking lots, roads.
- This plan consists of one or more drawings that present a large-scale depiction of areas with significant terminal facility development. Such a drawing is typically an enlargement of a portion of the ALP. At a commercial service airport, the drawing would include the passenger terminal area, but might also include general aviation facilities and cargo facilities. See AC 150/5300-13A, Appendix 5.
- Use scale that allows the extent of the terminal/FBO apron area to best fit the chosen sheet size, e.g., typical GA airports may be able to use 1”=50’ scale on a 22” X 34” sheet, but a complex hub airport with multiple terminal areas may require a 1”=100’ scale on a 36” X 48” sheet. Contact FAA if an airport layout requires scaling or sheet sizing other than what is listed.
- This drawing is not needed at every airport type and is therefore optional.

Terminal Area Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Title and Revision Blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	✓			
B. Building data table	All buildings on the Airport Layout Drawing should be identified by an alphanumeric character. List these identifiers in a table and give a description of the building. If no Terminal Area drawing is done, also include the top of structure elevation in MSL.	✓			
1. Structure identification number		✓			
2. Top elevation of structures (AMSL)		✓			
3. Obstruction marking/lighting (existing/future)	Show the location of existing and ultimate hangars. Include dimensions of apron and distance from runway and taxiway centerlines. See AC 150/5300-13A, Appendix 5. Show the elevation of the highest point of each structure.		✓		
C. Buildings to be removed or relocated noted	If any of the structures violate any airport or approach surfaces give an ultimate disposition to remedy the violation.			✓	
D. Fueling facilities, existing and future	Show the location of existing and ultimate fueling facilities. Include dimensions of apron and distance from runway and taxiway centerlines.			✓	

Terminal Area Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
E. Air carrier gates positions shown (existing/future)	Show the existing and ultimate air carrier gate positions. See AC 150/5300-13A, Chapter 5.	✓			
F. Existing and future security fencing with gates	Show the existing and ultimate security fencing and gates. See AC 150/5300-13A, Paragraph 606.	✓			
G. Building restriction line (BRL)	Show the Building Restriction Line (BRL) that is within the area/portion of airport shown. The BRL identifies suitable building area locations on airports. This should be located where the Part 77 surfaces are at 35' above the airport elevation unless a different height is coordinated with the FAA. See AC 150/5300-13A, Paragraph 213(a).	✓			
H. Taxiway or Taxilane centerlines designated	Show centerlines of all taxiway and taxilanes within the area/portion of airport shown.	✓			
I. Dimensions					
1. Clearance Dimensions between runway, taxiway, and taxilane centerlines and hangars, buildings, aircraft parking, and other objects.	Show the location of existing and ultimate apron. Include dimensions of apron and distance from runway and taxiway centerlines. Apron should be sized using activity forecast and the apron design spreadsheet. See AC 150/5300-13A, Chapter 5 and FAA Engineering Brief No. 75. Show the dimensions between existing and ultimate runway, taxiway, and taxilane centerlines and existing and ultimate hangars, buildings, aircraft parking, and other fixed or movable objects. See AC 150/5300-13A, Chapter 3 and Chapter 4. Show proposed tie-down layout on the apron area as well as taxilane marking plan. See AC 150/5300-13A, Appendix 5, AC 20-35, and AC 150/5340-1.	✓			
2. Dimensions of aprons, taxiways, etc. Apron/Hangar areas that do not meet dimensional standards of the critical aircraft should be identified and the wingspan/design group of the aircraft that can use that area depicted. Include tie down location with clearances		✓			

Terminal Area Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
J. Property Line	Show the property line(s) that are within the area/portion of airport shown.	✓			
K. Auto parking (existing & ultimate)	Show the existing and ultimate auto parking areas. See AC 150/5300-13A, Appendix 5.	✓			
L. Major airport drainage ditches or storm sewers	Show any significant airport drainage ditches or storm sewers within the area/portion of airport shown.			✓	
M. Special Use Area (e.g., Agricultural spraying support, Deicing, or Containment)	Show any special use areas within the area/portion of airport shown.			✓	
N. North Arrow with magnetic declination and year	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	✓			
O. Fence	Show the existing and ultimate perimeter fencing or general area fencing.	✓			
P. Entrance Road	Show the existing and ultimate entrance road. See 5300-13AFAA Order 5100.38, Chapter 6, Section 2.	✓			
Remarks **Refer to Terminal Area Drawing on Sheet 11.**					

A.9. Land Use Drawing

- Scale 1"=200' to 1"=600'.
- A drawing depicting on- and off-airport land uses and zoning in the area around the airport. At a minimum, the drawing must contain land within the 65 DNL noise contour. For medium or high activity commercial service airports, on-airport land use and off-airport land use may be on separate drawings. The Airport Layout Drawing should be used as a base map.
- Drawing optional. Need based on scope of work.

Land Use Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Title and Revision Blocks	Each drawing in the Airport Layout Plan drawing set shall have a Title and Revision Block. For drawings that have been updated, e.g., as-builts, the revision block should show the current revision number and date of revision.	✓			
B. Airport boundaries/property, existing & future (fee and easement)	Show the existing and ultimate property lines. If known, show property lines for parcels surrounding the airport.	✓			
C. Plan view of land uses by category (Agricultural, Aeronautical, Commercial, Residential, etc.). Use local land use categories.		✓			
1. On-Airport (existing & future)	Label existing and ultimate on-airport property by usage, e.g., Terminal Area, Air Cargo, Public Ramp, Airfield - Movement, Airfield - Non-movement, etc. Include existing and future airport features (e.g., runways, taxiways, aprons, safety areas/zones, terminal buildings and navigational aids).	✓			
2. Off-Airport (existing & future) [to the 65 DNL Contour at a minimum, if contour known]	Label existing and ultimate off-airport property by usage and zoning, e.g., Agricultural, Industrial, Residential, Commercial, etc.	✓			
D. Boundaries of local government	List any local zoning restrictions that are in place to protect the airport and surrounding airspace. See AC 150/5190-4.	✓			
E. Land use legend	Provide a legend that identifies all symbols and line types used on the drawing. Lines must be clear and readable with sufficient scale and quality to discern details.	✓			

Land Use Drawing					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
F. Public facilities (schools, hospitals, parks, churches etc.)	Identify public facilities, e.g., schools, parks, etc.	✓			
G. Runway visibility zone for intersecting runways	Show the Runway Visibility Zone(s) for the existing and ultimate airport configurations. See AC 150/5300-13A, Section 305.			✓	
H. Show off-airport property out to 65 DNL if available	Label existing and ultimate off-airport property by usage and zoning, e.g., Agricultural, Industrial, Residential, Commercial, etc.	✓			
I. Airport Overlay Zoning or Zoning Restrictions	List any local zoning restrictions that are in place to protect the airport and surrounding airspace. See AC 150/5190-4.		✓		
J. North arrow with magnetic declination and year	Magnetic declination may be calculated at http://www.ngdc.noaa.gov/geomag-web/#declination. This model is using the latest World Magnetic Model which has an Epoch Year of 2010. See FAA Order 8260.19, "Flight Procedures and Airspace." Chapter 2, Section 5, for further information.	✓			
K. Drawing details to include runways, taxiways, aprons, RPZ, terminal buildings and NAVAIDS	Show existing and future airport features (e.g., runways, taxiways, aprons, safety areas/zones, terminal buildings and navigational aids, etc.). See AC 150/5300-13A.	✓			
L. Crop Restrictions	Show the Crop Restriction Line (CRL). See AC 150/5300-13A, Paragraph 322 and AC 150/5200-33.			✓	
Remarks **Refer to Airport Land Use Plan on Sheet 12.**					

A.10. Airport Property Map / Exhibit A

- Scale 1”=200’ to 1”=600’.

Airport Property Map / Exhibit A					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
A. Will Property Map serve as Exhibit A? – **If YES,** follow the directions to the right. – **If NO,** go to item B below.	If prepared in accordance with AC 150/5100-17, Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects, use ARP SOP no. 3.00 Exhibit A guidance instead of below checklist.		✓		
If Property Map *will not* serve as Exhibit A: B. Title and Revision Blocks		✓			
C. Plan view showing parcels of land (existing, future, and ultimate)		✓			
1. Fee land interests (existing and future)		✓			
2. Easement interests (existing and future)		✓			
a. Part 77 protection		✓			
b. Compatible Land Use		✓			
c. RPZ protection		✓			
3. Airport Property Line		✓			
D. Legend – shading/cross hatching, survey monuments, etc.		✓			
E. Data Table					
1. Depiction of various tracts of land acquired to develop airport	If any obligations were incurred as a result of obtaining property, or an interest therein, they should be noted. Obligations that stem from Federal grant or an FAA-administered land transfer program, such as surplus property programs, should also be noted. The drawing should also depict easements beyond the airport boundary.	✓			

Airport Property Map / Exhibit A					
Item	**Instructions**	**Sponsor/Consultant**			**FAA**
		Yes	**No**	**N/A**	
2. Method of acquisition or property status (fee simple, easement, etc.)		✓			
3. Type of Acquisition Indicated	(e.g., AIP-noise, AIP-entitlement, PFC, surplus property, local purchase, local donation, condemnation, other)	✓			
4. Acreage		✓			
F. Access point(s) for through-the-fence arrangements including residential				✓	
Remarks **Refer to Airport Property Map on Sheet 13.**					

Appendix F

Airport Layout Plan (ALP) Drawing Set



AIRPORT LAYOUT PLAN
KEY WEST INTERNATIONAL AIRPORT (EYW)
KEY WEST, FLORIDA

VICINITY MAP



PREPARED FOR:

BOARD OF COUNTY COMMISSIONERS
MONROE COUNTY, FLORIDA

BOARD OF COUNTY COMMISSIONERS

CRAIG CATES	DISTRICT ONE
MICHELLE COLDIRON	DISTRICT TWO
HEATHER CARRUTHERS	DISTRICT THREE
DAVID RICE	DISTRICT FOUR
SYLVIA MURPHY	DISTRICT FIVE

DIRECTOR OF AIRPORTS

RICHARD STRICKLAND, CM

PREPARED BY:

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RICONDO®

RICONDO & ASSOCIATES, INC.
200 EAST ROBINSON STREET, SUITE 300
ORLANDO, FL 32801
PHONE (407) 381-5730

LOCATION MAP



JANUARY 2020

ACCEPTANCE OF THIS REPORT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE FAA TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED THEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

FAA'S APPROVAL OF THIS AIRPORT LAYOUT PLAN (ALP) REPRESENTS ACCEPTANCE OF THE GENERAL LOCATION OF FUTURE FACILITIES DEPICTED. DURING THE PRELIMINARY DESIGN PHASE THE AIRPORT OWNER IS REQUIRED TO RESUBMIT FOR APPROVAL FINAL LOCATIONS, HEIGHTS AND EXTERIOR FINISH OF STRUCTURES WHICH COULD ADVERSELY AFFECT SAFETY, EFFICIENCY OR UTILITY OF THE AIRPORT. FAA CONCERN IS OBSTRUCTIONS, IMPACT ON ELECTRONIC AIDS OR ADVERSE EFFECT ON CONTROLLER VIEW OF AIRCRAFT APPROACHES AND GROUND MOVEMENT AREAS.

INDEX OF DRAWINGS

SHEET NO.	DRAWING TITLE	REVISION	DATE
1	COVER		
2	AIRPORT DATA SHEET		
3	EXISTING AIRPORT LAYOUT PLAN		
4	FUTURE AIRPORT LAYOUT PLAN		
5	ULTIMATE AIRPORT LAYOUT PLAN		
6	14 CFR PART 77 AIRPORT AIRSPACE PLAN		
7	14 CFR PART 77 AIRPORT AIRSPACE INSETS		
8	14 CFR PART 77 AIRSPACE DATA SHEET		
9	INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 9		
10	INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 27		
11	TERMINAL AREA PLAN		
12	AIRPORT LAND USE PLAN		
13	EXHIBIT 'A' AIRPORT PROPERTY INVENTORY MAP		

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\211- ALP\CAD\EYW_ALP2017_SHEET01_COVER.dwg_Layout: 24x36_Jan 03, 2020, 11:52am

ABBREVIATIONS

ARP	AIRPORT REFERENCE POINT	NWS	NATIONAL WEATHER SERVICE
ASOS	AUTOMATED SURFACE OBSERVATION SYSTEM	OFA	OBJECT FREE AREA
ATCT	AIR TRAFFIC CONTROL TOWER	PAPI	PRECISION APPROACH PATH INDICATOR
AVE	AVENUE	PCN	PAVEMENT CLASSIFICATION NUMBER
BLVD	BOULEVARD	PK	AUTOMOBILE PARKING
BRL	BUILDING RESTRICTION LINE	RD	ROAD
CBP	U.S. CUSTOMS AND BORDER PROTECTION	REIL	RUNWAY END IDENTIFIER LIGHTS
DECL	DECLINATION	ROFA	RUNWAY OBJECT FREE AREA
DHS	DEPARTMENT OF HOMELAND SECURITY	RPZ	RUNWAY PROTECTION ZONE
DR	DRIVE	RSA	RUNWAY SAFETY AREA
EL	ELEVATION	RVZ	RUNWAY VISIBILITY ZONE
FAA	FEDERAL AVIATION ADMINISTRATION	R.O.W.	RIGHT OF WAY
FAR	FEDERAL AVIATION REGULATION	R/W	RUNWAY
FUT	FUTURE	S.R.	STATE ROAD
LAT	LATITUDE	ST	STREET
LONG	LONGITUDE	TDZE	TOUCHDOWN ZONE ELEVATION
MITL	MEDIUM INTENSITY TAXIWAY LIGHTING	TOFA	TAXIWAY OBJECT FREE AREA
MPH	MILES PER HOUR	TSA	TAXIWAY SAFETY AREA
MSL	MEAN SEA LEVEL	T/W	TAXIWAY
NOAA	NATIONAL OCEANIC ATMOSPHERIC ADMINISTRATION	WS	WIND SOCK

AIRPORT DATA

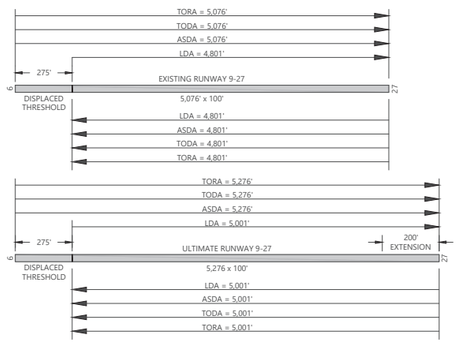
DESCRIPTION		EXISTING	FUTURE	ULTIMATE
Airport Area (ACRES)		334	SAME	SAME
Airport Elevation (MSL)		2.8'	SAME	SAME
Airport Reference Code (ARC)		C-III	SAME	SAME
Airport Reference Point Latitude		24° 33' 22.00" N	24° 33' 22.03" N	24° 33' 22.88" N
Airport Reference Point Longitude		81° 45' 34.40" W	81° 45' 34.77" W	81° 45' 34.76" W
Mean Maximum Temperature - Hottest Month		90 °F	SAME	SAME
Design Aircraft (AIRFIELD)		Boeing 737-700W	SAME	SAME
Airport NAVAIDs		BEACON, NDB, VOR	SAME	SAME
Miscellaneous Facilities		N/A	SAME	SAME
Magnetic Variation	Declination	5° 50' W	SAME	SAME
	Annual Rate of Change	0° 11' W	SAME	SAME
	Date	7/10/2017	SAME	SAME
	Source	National Oceanic and Atmospheric Administration	SAME	SAME
Airport Category (NPIAS)		Non-Hub	Primary Small-Hub	SAME
State Equivalent Service Role		Primary Commercial	SAME	SAME

RUNWAY DATA

DESCRIPTION		RUNWAY 9-27					
		EXISTING		FUTURE		ULTIMATE	
		RUNWAY 9	RUNWAY 27	RUNWAY 9	RUNWAY 27	RUNWAY 9	RUNWAY 27
Runway Design Code		C / II / 5000	C / III / 5000	SAME	SAME	SAME	SAME
Critical Aircraft		Boeing 737-700W		SAME		SAME	
Approach Reference Code (APRC)		B / III / 5000 D / II / 5000	B / III / 5000 D / II / 5000	SAME	SAME	SAME	SAME
Departure Reference Code (DPRC)		B / III D / II	B / III D / I	SAME	SAME	SAME	SAME
Runway Length		5,076'		5,276'		SAME	
Runway Width		100'		SAME		SAME	
Pavement Strength By:	Wheel Loading (x 1000 lbs.)	S-75		SAME		SAME	
		D-125		SAME		SAME	
		2D-195		SAME		SAME	
Pavement Strength By:	PCN	75 F/A/W/T		SAME		SAME	
True Bearing		89.4°	269.4°	SAME	SAME	SAME	SAME
Magnetic Bearing		94.9°	274.9°	SAME	SAME	SAME	SAME
Runway Shoulder Width		10'		SAME		SAME	
Blast Pad Length		328'	375'	SAME	SAME	SAME	SAME
Blast Pad Width		162'	124'	SAME	SAME	SAME	SAME
Runway End Elevation (MSL)		3.2'	2.5'	SAME	SAME	SAME	SAME
Runway End Coordinates	Latitude	24° 33' 21.76" N	24° 33' 22.30" N	SAME	24°33' 22.32" N	24°33' 22.61" N	24°33' 23.15" N
	Longitude	81° 46' 03.33" W	81° 45' 08.36" W	SAME	81°45' 06.19" W	81°46' 03.34" W	81°45' 06.19" W
Displaced Threshold Coordinates	Latitude	24° 33' 21.79" N	N/A	SAME	N/A	24°33' 22.64" N	N/A
	Longitude	81° 46' 00.35" W	N/A	SAME	N/A	81°46' 00.37" W	N/A
Displaced Threshold Distance		275'	N/A	SAME	N/A	SAME	N/A
Displaced Runway Threshold Elevation (MSL)		3.35'	N/A	SAME	N/A	SAME	N/A
Runway Touchdown Zone Elevation (MSL)		2.8'	2.8'	SAME	SAME	SAME	SAME
Effective Gradient (IN %)		0.0%	-0.0%	SAME	SAME	SAME	SAME
Surface Composition		Asphalt		SAME		SAME	
Surface Condition		Good		SAME		SAME	
Surface Treatment		Grooved		SAME		SAME	
Runway Lighting		MIRL		SAME		SAME	
Runway Marking		Non-precision		SAME		SAME	
NAVAIDS		RNAV (GPS)	RNAV (GPS)	SAME	SAME	SAME	SAME
Approach Lighting		PAPI-4L, REIL	PAPI-4R, REIL	SAME	SAME	SAME	SAME
Approach Visibility Minimums		1 mile	1 mile	SAME	SAME	SAME	SAME
Aeronautical Survey Required for Approach		Vertically Guided	Vertically Guided	SAME	SAME	SAME	SAME
Part 77 Approach Type		Non-precision	Non-precision	SAME	SAME	SAME	SAME
Part 77 Approach Slope		34:1	34:1	SAME	SAME	SAME	SAME
Threshold Siting Surface (TSS) Slope - Advisory Circular 150/5300-13A, Change 1		TYPE 5 (20:1)	TYPE 5 (20:1)	SAME	SAME	SAME	SAME
Threshold Siting Surface (TSS) Slope - Engineering Brief #99		TYPE 4 (20:1)	TYPE 4 (20:1)	SAME	SAME	SAME	SAME
TERPS Departure Surface/OCS (Slope)		YES (40:1)	YES (40:1)	SAME	SAME	SAME	SAME
Runway Protection Zone (RPZ)	Length	1,700'	1,700'	SAME	SAME	SAME	SAME
	Inner Width	500'	500'	SAME	SAME	SAME	SAME
	Outer Width	1,010'	1,010'	SAME	SAME	SAME	SAME
Runway Safety Area (RSA) - (Design Standards)	Length Beyond Runway End	1,000'		SAME		SAME	
	Width	500'		SAME		SAME	
Runway Safety Area (RSA) - (Actual)	Length Beyond Runway End	600'	375'	SAME	SAME	SAME	SAME
	Width	350' - 400'		SAME		SAME	
Runway Object Free Area (ROFA) - (Design Standards)	Length Beyond Runway End	1,000'		SAME		SAME	
	Width	800'		SAME		SAME	
Runway Object Free Area (ROFA) - (Actual)	Length Beyond Runway End	600'	375'	SAME	SAME	SAME	SAME
	Width	500'		SAME		SAME	
Obstacle Free Zone (OFZ)	Length Beyond Runway End	200'		SAME		SAME	
	Width	400'		SAME		SAME	
Precision Obstacle Free Zone (POFZ)	Length Beyond Runway End	N/A	N/A	SAME	SAME	SAME	SAME
	Width	N/A	N/A	SAME	SAME	SAME	SAME

MODIFICATION OF STANDARDS

	DATE APPROVED	TITLE OF STANDARD	STANDARDS	APPROVED MODIFICATION
1	12/13/2019	FAA AC 150/5300-13A Change 1 Airport Design, Table A7-9 Runway Design Standards Matrix, C/D/E - III FAA AC 150/5300-13A Change 1 Airport Design, Tables 3-7 and 3-8 Approach and Departure Reference Codes	Runway centerline to parallel taxiway centerline separation of 400 feet for C-III aircraft. Runway to taxiway ≥ 350 feet and ≥ 400 feet, for C-III aircraft landing and takeoff operations respectively.	Maintain runway-to-taxiway separation of 315 feet.
2	12/19/2017	FAA AC 150/5300-13A Change 1 Airport Design, Paragraph 3-13, Section d. RSA Grades FAA AC 150/5300-13A Change 1 Airport Design, Figure 3-23	Runway pavement: 1.0% to 1.5%; Shoulder Pavement: 1.5% to 5%; 1.5 inches drop between paved and unpaved surfaces; Maintain a 5% grade for 10 feet of unpaved surface adjacent to the paved surface; RSA width: 1.5% to 3%.	Transverse grade of 0.8% for the area within the RSA beyond the paved shoulders (in lieu of 5% for 10 feet and 1.5% to 3%).
3	12/13/2019	FAA AC 150/5300-13A Change 1 Airport Design, Table A7-9 Runway Design Standards Matrix, C/D/E - III	Runway object free area (ROFA) width of 800 feet for C-III aircraft.	Allow airport property fence, service road, and private swimming pool/tennis courts to penetrate the C-III ROFA.



EXISTING TAXIWAY DATA

EXISTING ID	WIDTH				LIGHTING	OBJECTS INSIDE TSA AND TOFA	SEPARATION FROM TAXIWAY CL TO FIXED MOVABLE OBJECT
	TAXIWAY	SHOULDER	TSA	TOFA			
A (PARALLEL)	50'	N/A	118'	186'	MITL	PRIVATE SERVICE ROAD	93'
A-1	25'	N/A	49'	89'	MITL	NONE	44.5'
A-2	25'	N/A	49'	89'	MITL	NONE	44.5'
A-3	25'	N/A	49'	89'	MITL	NONE	44.5'
A-4	25'	N/A	49'	89'	MITL	NONE	44.5'
A-5	35'	N/A	79'	131'	MITL	NONE	65.5'
A-6	35'	N/A	79'	131'	MITL	NONE	65.5'
A-7	35'	N/A	79'	131'	MITL	NONE	65.5'
A-8	35'	N/A	79'	131'	MITL	NONE	65.5'
A-9	50'	N/A	118'	186'	MITL	NONE	93'
A-10	50'	N/A	118'	186'	MITL	NONE	93'
A-11	50'	N/A	118'	186'	MITL	NONE	93'
B	150'	N/A	118'	186'	MITL	NONE	93'
C	50'	N/A	118'	186'	MITL	NONE	93'
D	50'	N/A	118'	186'	MITL	NONE	93'
E	150'	N/A	118'	186'	MITL	NONE	93'

DECLARED DISTANCES

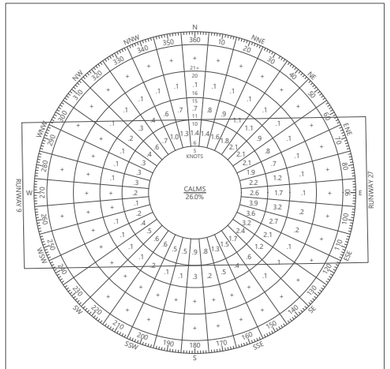
	EXISTING	FUTURE	ULTIMATE
RUNWAY 9			
TAKE-OFF RUN AVAILABLE (TORA)	5,076'	SAME	5,276'
TAKE-OFF DISTANCE AVAILABLE (TODA)	5,076'	SAME	5,276'
ACCELERATE STOP DISTANCE AVAILABLE (ASDA)	5,076'	SAME	5,276'
LANDING DISTANCE AVAILABLE (LDA)	4,801'	SAME	5,001'
RUNWAY 27			
TAKE-OFF RUN AVAILABLE (TORA)	4,801'	SAME	5,001'
TAKE-OFF DISTANCE AVAILABLE (TODA)	4,801'	SAME	5,001'
ACCELERATE STOP DISTANCE AVAILABLE (ASDA)	4,801'	SAME	5,001'
LANDING DISTANCE AVAILABLE (LDA)	4,801'	SAME	5,001'

FUTURE/ULTIMATE TAXIWAY DATA

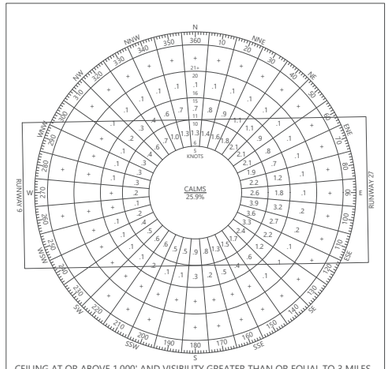
FUTURE ID	WIDTH				LIGHTING	OBJECTS INSIDE TSA AND TOFA	SEPARATION FROM TAXIWAY CL TO FIXED MOVABLE
	TAXIWAY	SHOULDER	TSA	TOFA			
A (PARALLEL)	50'	TBD	118'	186'	MITL	NONE	93'
A1	50'	TBD	118'	186'	MITL	NONE	93'
A2 (B)*	66'	TBD	118'	186'	MITL	NONE	93'
A3 (C)*	64'	TBD	118'	186'	MITL	NONE	93'
A4 (D)*	64'	TBD	118'	186'	MITL	NONE	93'
A5 (E)*	66'	TBD	118'	186'	MITL	NONE	93'
A6	50'	TBD	118'	186'	MITL	NONE	93'
B-1	74'	TBD	49'	89'	MITL	NONE	44.5'
B-2	74'	TBD	49'	89'	MITL	NONE	44.5'
B-3	74'	TBD	49'	89'	MITL	NONE	44.5'
B-4	74'	TBD	49'	89'	MITL	NONE	44.5'
B-5	74'	TBD	49'	89'	MITL	NONE	44.5'
B-6 (A-1)*	50'	TBD	118'	186'	MITL	NONE	93'
B-7 (A-2)*	74'	TBD	49'	89'	MITL	NONE	44.5'
B-8 (A-3)*	74'	TBD	49'	89'	MITL	NONE	44.5'
B-9 (A-4)*	74'	TBD	49'	89'	MITL	NONE	44.5'
B-10 (A-5)*	74'	TBD	118'	186'	MITL	NONE	93'
B-11 (A-6)*	74'	TBD	118'	186'	MITL	NONE	93'
B-12 (A-7)*	74'	TBD	118'	186'	MITL	NONE	93'
B-13 (A-8)*	74'	TBD	118'	186'	MITL	NONE	93'
B-14 (D)*	92'	TBD	118'	186'	MITL	NONE	93'
B-15 (A-9)*	92'	TBD	118'	186'	MITL	NONE	93'
B-16 (A-10)*	92'	TBD	118'	186'	MITL	NONE	93'
B-17 (A-11)*	92'	TBD	118'	186'	MITL	NONE	93'
B-18 (E)*	115'	TBD	118'	186'	MITL	NONE	93'

* EXISTING TAXIWAY DESIGNATOR SHOWN IN PARENTHESIS TO BE REDESIGNATED IN FUTURE AIRFIELD DEVELOPMENT.

ALL WEATHER WIND ROSE

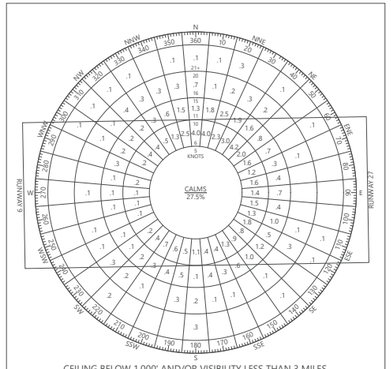


VFR WIND ROSE



CEILING AT OR ABOVE 1,000' AND VISIBILITY GREATER THAN OR EQUAL TO 3 MILES

IFR WIND ROSE



CEILING BELOW 1,000' AND/OR VISIBILITY LESS THAN 3 MILES

ALL WEATHER WIND ROSE

CROSSWIND COMPONENT	RUNWAY COVERAGE	
	Runway 9	Runway 27
10.5 KTS (12 mph)	81.67%	36.81%
	92.51%	
13 KTS (15 mph)	84.92%	38.63%
	97.58%	
16 KTS (18.4 mph)	85.77%	39.28%
	99.08%	
20 KTS (23 mph)	86.22%	39.67%
	99.92%	

VFR WIND ROSE

CROSSWIND COMPONENT	RUNWAY COVERAGE	
	Runway 9	Runway 27
10.5 KTS (12 mph)	81.78%	36.78%
	92.61%	
13 KTS (15 mph)	85.00%	38.59%
	97.64%	
16 KTS (18.4 mph)	85.84%	39.23%
	99.12%	
20 KTS (23 mph)	86.28%	39.60%
	99.92%	

IFR WIND ROSE

CROSSWIND COMPONENT	RUNWAY COVERAGE	
	Runway 9	Runway 27
10.5 KTS (12 mph)	72.34%	39.20%
	84.08%	
13 KTS (15 mph)	78.11%	42.29%
	92.94%	
16 KTS (18.4 mph)	79.60%	43.88%
	96.02%	
20 KTS (23 mph)	81.09%	45.47%
	99.10%	

WIND DATA SOURCE: NATIONAL CLIMATIC DATA CENTER; U.S. DEPARTMENT OF COMMERCE; ASHEVILLE, NORTH CAROLINA

STATION: 722010, KEY WEST, FLORIDA; PERIOD OF RECORD: 2006 - 2015 (10 YEAR ANNUAL AVERAGED DATA); NO. OF OBSERVATIONS: 87,463

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200 EAST ROBINSON STREET, SUITE 300
ORLANDO, FL 32801
PHONE (407) 381-5730

NO.	REVISIONS	DATE

AIRPORT DATA SHEET

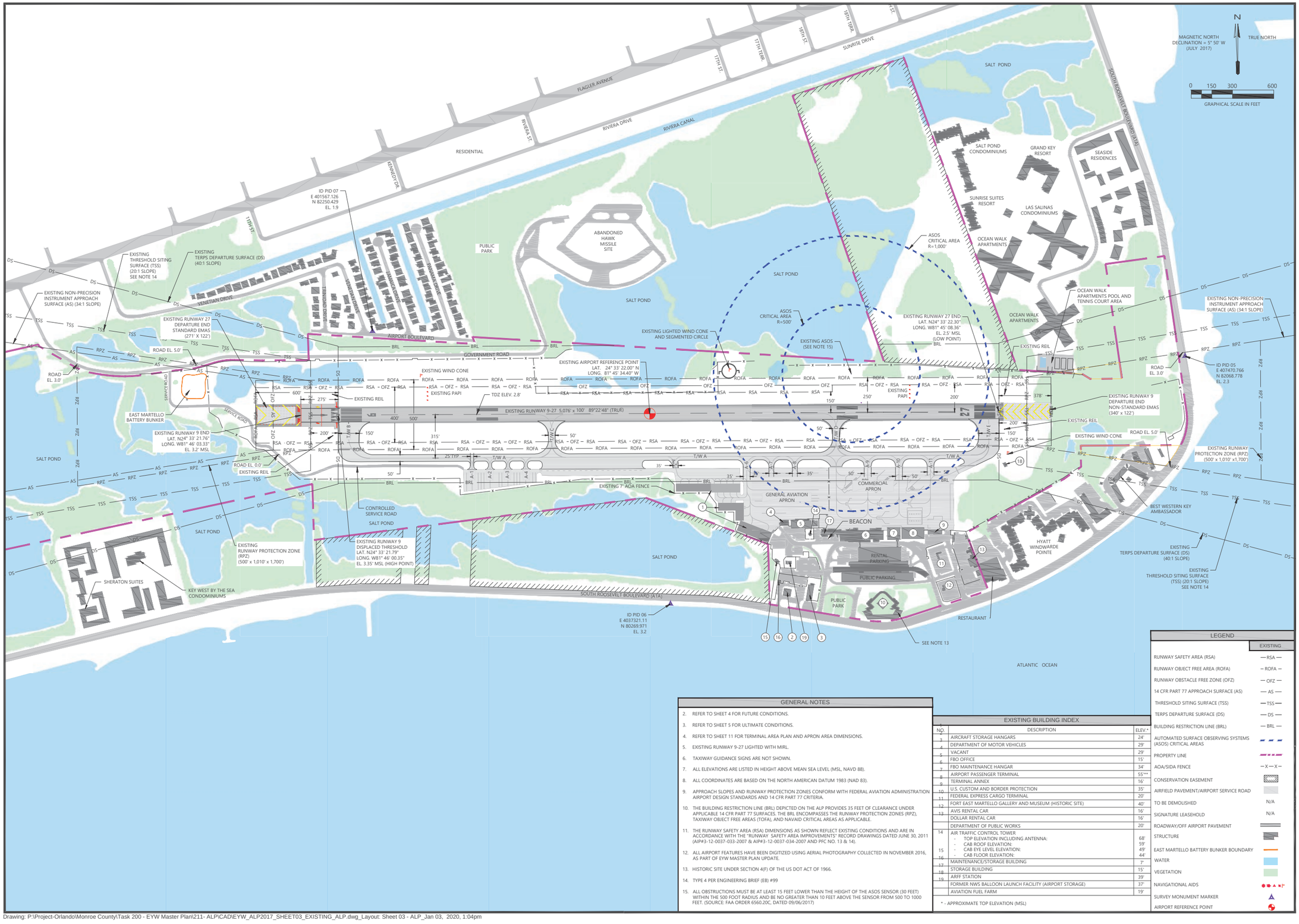
KEY WEST INTERNATIONAL AIRPORT
KEY WEST, FLORIDA

DRAWN BY: JA
CHECKED BY: SC

PREPARED BY:
RICONDO & ASSOCIATES, INC.

DATE:
JANUARY 2020

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\211- ALP\CAD\EYW_ALP2017_SHEET02_DATA TABLES.dwg_Layout: Sheet XX_Jan 07, 2020, 11:10am



GENERAL NOTES

2. REFER TO SHEET 4 FOR FUTURE CONDITIONS.
3. REFER TO SHEET 5 FOR ULTIMATE CONDITIONS.
4. REFER TO SHEET 11 FOR TERMINAL AREA PLAN AND APRON AREA DIMENSIONS.
5. EXISTING RUNWAY 9-27 LIGHTED WITH MIRL.
6. TAXIWAY GUIDANCE SIGNS ARE NOT SHOWN.
7. ALL ELEVATIONS ARE LISTED IN HEIGHT ABOVE MEAN SEA LEVEL (MSL, NAVD 88).
8. ALL COORDINATES ARE BASED ON THE NORTH AMERICAN DATUM 1983 (NAD 83).
9. APPROACH SLOPES AND RUNWAY PROTECTION ZONES CONFORM WITH FEDERAL AVIATION ADMINISTRATION AIRPORT DESIGN STANDARDS AND 14 CFR PART 77 CRITERIA.
10. THE BUILDING RESTRICTION LINE (BRL) DEPICTED ON THE ALP PROVIDES 35 FEET OF CLEARANCE UNDER APPLICABLE 14 CFR PART 77 SURFACES. THE BRL ENCOMPASSES THE RUNWAY PROTECTION ZONES (RPZ), TAXIWAY OBJECT FREE AREAS (TOFA), AND NAVAID CRITICAL AREAS AS APPLICABLE.
11. THE RUNWAY SAFETY AREA (RSA) DIMENSIONS AS SHOWN REFLECT EXISTING CONDITIONS AND ARE IN ACCORDANCE WITH THE "RUNWAY SAFETY AREA IMPROVEMENTS" RECORD DRAWINGS DATED JUNE 30, 2011 (AIP#3-12-0037-033-2007 & AIP#3-12-0037-034-2007 AND PFC NO. 13 & 14).
12. ALL AIRPORT FEATURES HAVE BEEN DIGITIZED USING AERIAL PHOTOGRAPHY COLLECTED IN NOVEMBER 2016, AS PART OF EYW MASTER PLAN UPDATE.
13. HISTORIC SITE UNDER SECTION 4(F) OF THE US DOT ACT OF 1966.
14. TYPE 4 PER ENGINEERING BRIEF (EB) #99
15. ALL OBSTRUCTIONS MUST BE AT LEAST 15 FEET LOWER THAN THE HEIGHT OF THE ASOS SENSOR (30 FEET) WITHIN THE 500 FOOT RADIUS AND BE NO GREATER THAN 10 FEET ABOVE THE SENSOR FROM 500 TO 1000 FEET. (SOURCE: FAA ORDER 6560.20C, DATED 09/06/2017)

EXISTING BUILDING INDEX

NO.	DESCRIPTION	ELEV.*
1		
2	AIRCRAFT STORAGE HANGARS	24'
3	DEPARTMENT OF MOTOR VEHICLES	29'
4	VACANT	29'
5	FBO OFFICE	15'
6	FBO MAINTENANCE HANGAR	34'
7	AIRPORT PASSENGER TERMINAL	55'**
8	TERMINAL ANNEX	16'
9	U.S. CUSTOM AND BORDER PROTECTION	35'
10	FEDERAL EXPRESS CARGO TERMINAL	20'
11	FORT EAST MARTELLO GALLERY AND MUSEUM (HISTORIC SITE)	40'
12	AVIS RENTAL CAR	16'
13	DOLLAR RENTAL CAR	16'
	DEPARTMENT OF PUBLIC WORKS	20'
14	AIR TRAFFIC CONTROL TOWER	
	- TOP ELEVATION INCLUDING ANTENNA:	68'
	- CAB ROOF ELEVATION:	59'
15	- CAB EYE LEVEL ELEVATION:	49'
16	- CAB FLOOR ELEVATION:	44'
17	MAINTENANCE/STORAGE BUILDING	7'
18	STORAGE BUILDING	15'
19	ARFF STATION	39'
	FORMER NWS BALLOON LAUNCH FACILITY (AIRPORT STORAGE)	37'
	AVIATION FUEL FARM	19'

* - APPROXIMATE TOP ELEVATION (MSL)

LEGEND

	EXISTING
RUNWAY SAFETY AREA (RSA)	— RSA —
RUNWAY OBJECT FREE AREA (ROFA)	— ROFA —
RUNWAY OBSTACLE FREE ZONE (OFZ)	— OFZ —
14 CFR PART 77 APPROACH SURFACE (AS)	— AS —
THRESHOLD SITING SURFACE (TSS)	— TSS —
TERPS DEPARTURE SURFACE (DS)	— DS —
BUILDING RESTRICTION LINE (BRL)	— BRL —
AUTOMATED SURFACE OBSERVING SYSTEMS (ASOS) CRITICAL AREAS	
PROPERTY LINE	
AOA/SIDA FENCE	— X — X —
CONSERVATION EASEMENT	
AIRFIELD PAVEMENT/AIRPORT SERVICE ROAD	
TO BE DEMOLISHED	N/A
SIGNATURE LEASEHOLD	N/A
ROADWAY/OFF AIRPORT PAVEMENT	
STRUCTURE	
EAST MARTELLO BATTERY BUNKER BOUNDARY	
WATER	
VEGETATION	
NAVIGATIONAL AIDS	
SURVEY MONUMENT MARKER	
AIRPORT REFERENCE POINT	

MONROE COUNTY 18 23

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NO.	REVISIONS	DATE

EXISTING AIRPORT LAYOUT PLAN

KEY WEST INTERNATIONAL AIRPORT
KEY WEST, FLORIDA

DRAWN BY: JA
CHECKED BY: SC

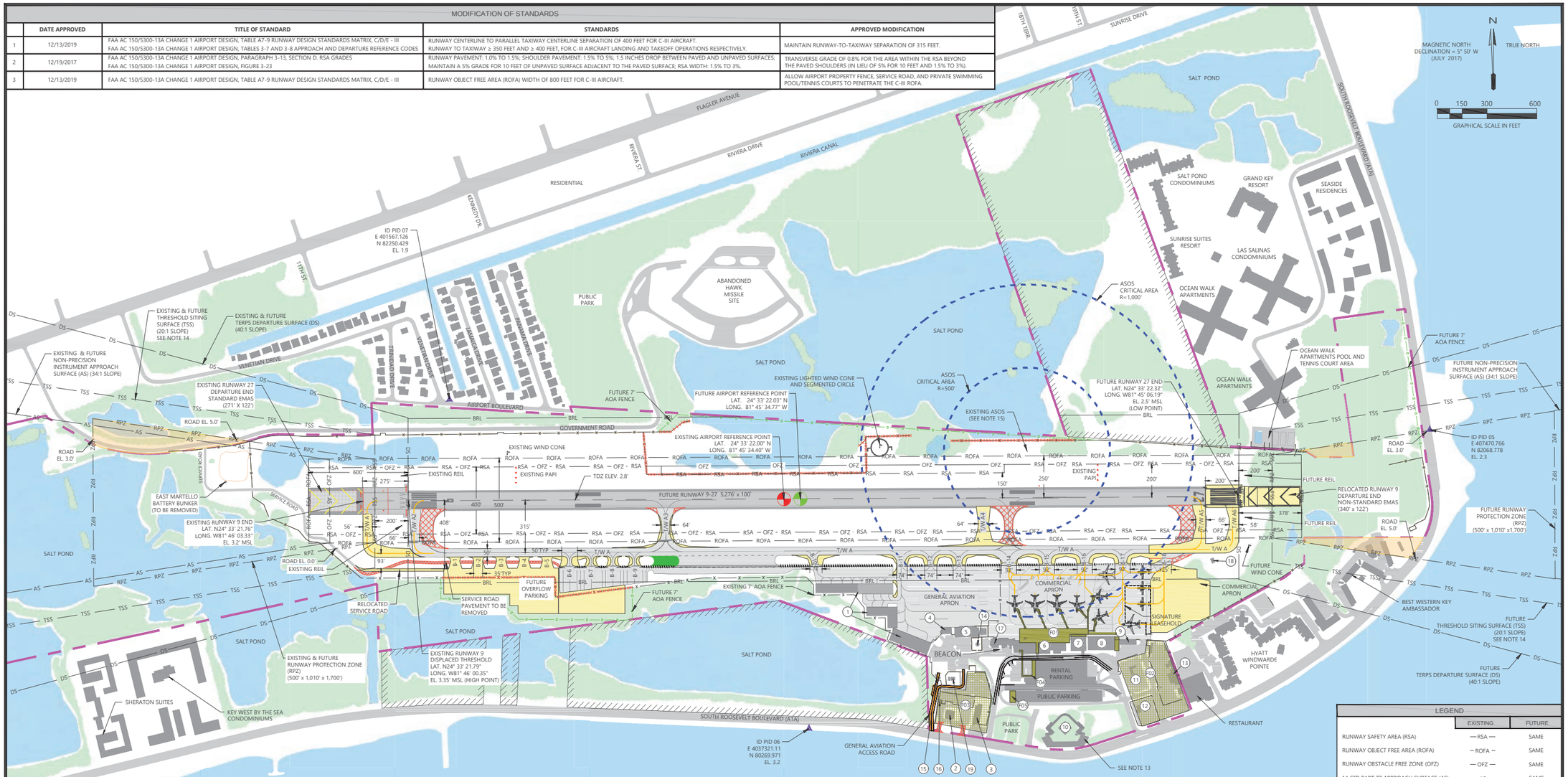
PREPARED BY:
RICONDO & ASSOCIATES, INC.

DATE:
JANUARY 2020

SHEET 3 OF 13

MODIFICATION OF STANDARDS

	DATE APPROVED	TITLE OF STANDARD	STANDARDS	APPROVED MODIFICATION
1	12/13/2019	FAA AC 150/5300-13A CHANGE 1 AIRPORT DESIGN, TABLE A7-9 RUNWAY DESIGN STANDARDS MATRIX, C/D/E - III FAA AC 150/5300-13A CHANGE 1 AIRPORT DESIGN, TABLES 3-7 AND 3-8 APPROACH AND DEPARTURE REFERENCE CODES	RUNWAY CENTERLINE TO PARALLEL TAXIWAY CENTERLINE SEPARATION OF 400 FEET FOR C-III AIRCRAFT. RUNWAY TO TAXIWAY ≥ 350 FEET AND ≥ 400 FEET, FOR C-III AIRCRAFT LANDING AND TAKEOFF OPERATIONS RESPECTIVELY.	MAINTAIN RUNWAY-TO-TAXIWAY SEPARATION OF 315 FEET.
2	12/19/2017	FAA AC 150/5300-13A CHANGE 1 AIRPORT DESIGN, PARAGRAPH 3-13, SECTION D. RSA GRADES FAA AC 150/5300-13A CHANGE 1 AIRPORT DESIGN, FIGURE 3-23	RUNWAY PAVEMENT: 1.0% TO 1.5%; SHOULDER PAVEMENT: 1.5% TO 5%; 1.5 INCHES DROP BETWEEN PAVED AND UNPAVED SURFACES; MAINTAIN A 5% GRADE FOR 10 FEET OF UNPAVED SURFACE ADJACENT TO THE PAVED SURFACE; RSA WIDTH: 1.5% TO 3%.	TRANSVERSE GRADE OF 0.8% FOR THE AREA WITHIN THE RSA BEYOND THE PAVED SHOULDERS (IN LIEU OF 5% FOR 10 FEET AND 1.5% TO 3%).
3	12/13/2019	FAA AC 150/5300-13A CHANGE 1 AIRPORT DESIGN, TABLE A7-9 RUNWAY DESIGN STANDARDS MATRIX, C/D/E - III	RUNWAY OBJECT FREE AREA (ROFA) WIDTH OF 800 FEET FOR C-III AIRCRAFT.	ALLOW AIRPORT PROPERTY FENCE, SERVICE ROAD, AND PRIVATE SWIMMING POOL/TENNIS COURTS TO PENETRATE THE C-III ROFA.



FEDERAL AVIATION ADMINISTRATION APPROVAL STAMP

APPROVED BY

MONROE COUNTY DIRECTOR OF AIRPORTS — DATE

GENERAL NOTES

1. REFER TO SHEET 2 FOR TAXIWAY DATA AND ADDITIONAL AIRFIELD INFORMATION.
2. REFER TO SHEET 3 FOR EXISTING CONDITIONS.
3. REFER TO SHEET 5 FOR ULTIMATE CONDITIONS.
4. REFER TO SHEET 11 FOR TERMINAL AREA PLAN AND APRON AREA DIMENSIONS.
5. EXISTING AND FUTURE RUNWAY 9-27 LIGHTED WITH MIRL.
6. TAXIWAY GUIDANCE SIGNS ARE NOT SHOWN.
7. ALL ELEVATIONS ARE LISTED IN HEIGHT ABOVE MEAN SEA LEVEL (MSL, NAVD 88).
8. ALL COORDINATES ARE BASED ON THE NORTH AMERICAN DATUM 1983 (NAD 83).
9. APPROACH SLOPES AND RUNWAY PROTECTION ZONES CONFORM WITH FEDERAL AVIATION ADMINISTRATION AIRPORT DESIGN STANDARDS AND 14 CFR PART 77 CRITERIA.
10. THE BUILDING RESTRICTION LINE (BRL) DEPICTED ON THE ALP PROVIDES 35 FEET OF CLEARANCE UNDER APPLICABLE 14 CFR PART 77 SURFACES. THE BRL ENCOMPASSES THE RUNWAY PROTECTION ZONES (RPZ), TAXIWAY OBJECT FREE AREAS (TOFA), AND NAVAID CRITICAL AREAS AS APPLICABLE.
11. THE RUNWAY SAFETY AREA (RSA) DIMENSIONS AS SHOWN REFLECT EXISTING CONDITIONS AND ARE IN ACCORDANCE WITH THE "RUNWAY SAFETY AREA IMPROVEMENTS" RECORD DRAWINGS DATED JUNE 30, 2011 (AIP#3-12-0037-033-2007 & AIP#3-12-0037-034-2007 AND PFC NO. 13 & 14).
12. ALL AIRPORT FEATURES HAVE BEEN DIGITIZED USING AERIAL PHOTOGRAPHY COLLECTED IN NOVEMBER 2016, AS PART OF EYW MASTER PLAN UPDATE.
13. HISTORIC SITE UNDER SECTION 4(F) OF THE US DOT ACT OF 1966.
14. TYPE 4 PER ENGINEERING BRIEF (EB) #99.
15. ALL OBSTRUCTIONS MUST BE AT LEAST 15 FEET LOWER THAN THE HEIGHT OF THE ASOS SENSOR (30 FEET) WITHIN THE 500 FOOT RADIUS AND BE NO GREATER THAN 10 FEET ABOVE THE SENSOR FROM 500 TO 1000 FEET. (SOURCE: FAA ORDER 6560.20C, DATED 09/06/2017)

EXISTING BUILDING INDEX

NO.	DESCRIPTION	ELEV.*
1	AIRCRAFT STORAGE HANGARS	24'
2	DEPARTMENT OF MOTOR VEHICLES	29'
3	VACANT	29'
4	FBO OFFICE	15'
5	FBO MAINTENANCE HANGAR	34'
6	AIRPORT PASSENGER TERMINAL	55***
7	TERMINAL ANNEX	16'
8	U.S. CUSTOM AND BORDER PROTECTION	35'
9	FEDERAL EXPRESS CARGO TERMINAL	20'
10	FORT EAST MARTELLO GALLERY AND MUSEUM (HISTORIC SITE)	40'
11	AVIS RENTAL CAR	16'
12	DOLLAR RENTAL CAR	16'
13	DEPARTMENT OF PUBLIC WORKS (TO BE DEMOLISHED)	20'
14	AIR TRAFFIC CONTROL TOWER - TOP ELEVATION INCLUDING ANTENNA: 68' - CAB ROOF ELEVATION: 59' - CAB EYE LEVEL ELEVATION: 49' - CAB FLOOR ELEVATION: 44'	
15	MAINTENANCE/STORAGE BUILDING	7'
16	STORAGE BUILDING	15'
17	ARFF STATION	39'
18	FORMER NWS BALLOON LAUNCH FACILITY (AIRPORT STORAGE) (TO BE DEMOLISHED)	37'
19	AVIATION FUEL FARM	19'

* - APPROXIMATE TOP ELEVATION (MSL)

FUTURE BUILDING INDEX

NO.	DESCRIPTION	ELEV.*
F01	AIRSIDE PASSENGER TERMINAL	TBD
F02	RENTAL CAR / PUBLIC PARKING FACILITY	TBD
F03	RENTAL CAR / PUBLIC PARKING FACILITY	TBD
F04	LANDSIDE TERMINAL EXPANSION	TBD
F05	CONSOLIDATED MAINTENANCE STORAGE FACILITY	TBD

* - APPROXIMATE TOP ELEVATION (MSL)

LEGEND

	EXISTING	FUTURE
RUNWAY SAFETY AREA (RSA)	— RSA —	SAME
RUNWAY OBJECT FREE AREA (ROFA)	– ROFA –	SAME
RUNWAY OBSTACLE FREE ZONE (OFZ)	— OFZ —	SAME
14 CFR PART 77 APPROACH SURFACE (AS)	— AS —	SAME
THRESHOLD SITING SURFACE (TSS)	— TSS —	SAME
TERPS DEPARTURE SURFACE (DS)	— DS —	SAME
BUILDING RESTRICTION LINE (BRL)	— BRL —	SAME
AUTOMATED SURFACE OBSERVING SYSTEMS (ASOS) CRITICAL AREAS		SAME
PROPERTY LINE		SAME
AOA/SIDA FENCE	— X — X —	
AOA FENCE TO BE RELOCATED	N/A	
ROADWAY		
AVIGATION EASEMENT	N/A	
CONSERVATION EASEMENT		SAME
AIRFIELD PAVEMENT/AIRPORT SERVICE ROAD		
TO BE DEMOLISHED	N/A	
SIGNATURE LEASEHOLD	N/A	
STRUCTURE		
PUBLIC PARKING/RENTAL CAR FACILITY	N/A	
NO-TAXI ISLAND	N/A	
EAST MARTELLO BATTERY BUNKER BOUNDARY		SAME
WATER		SAME
VEGETATION		SAME
NAVIGATIONAL AIDS		
SURVEY MONUMENT MARKER		SAME
AIRPORT REFERENCE POINT		

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NO.	REVISIONS	DATE

FUTURE AIRPORT LAYOUT PLAN

KEY WEST INTERNATIONAL AIRPORT
KEY WEST, FLORIDA

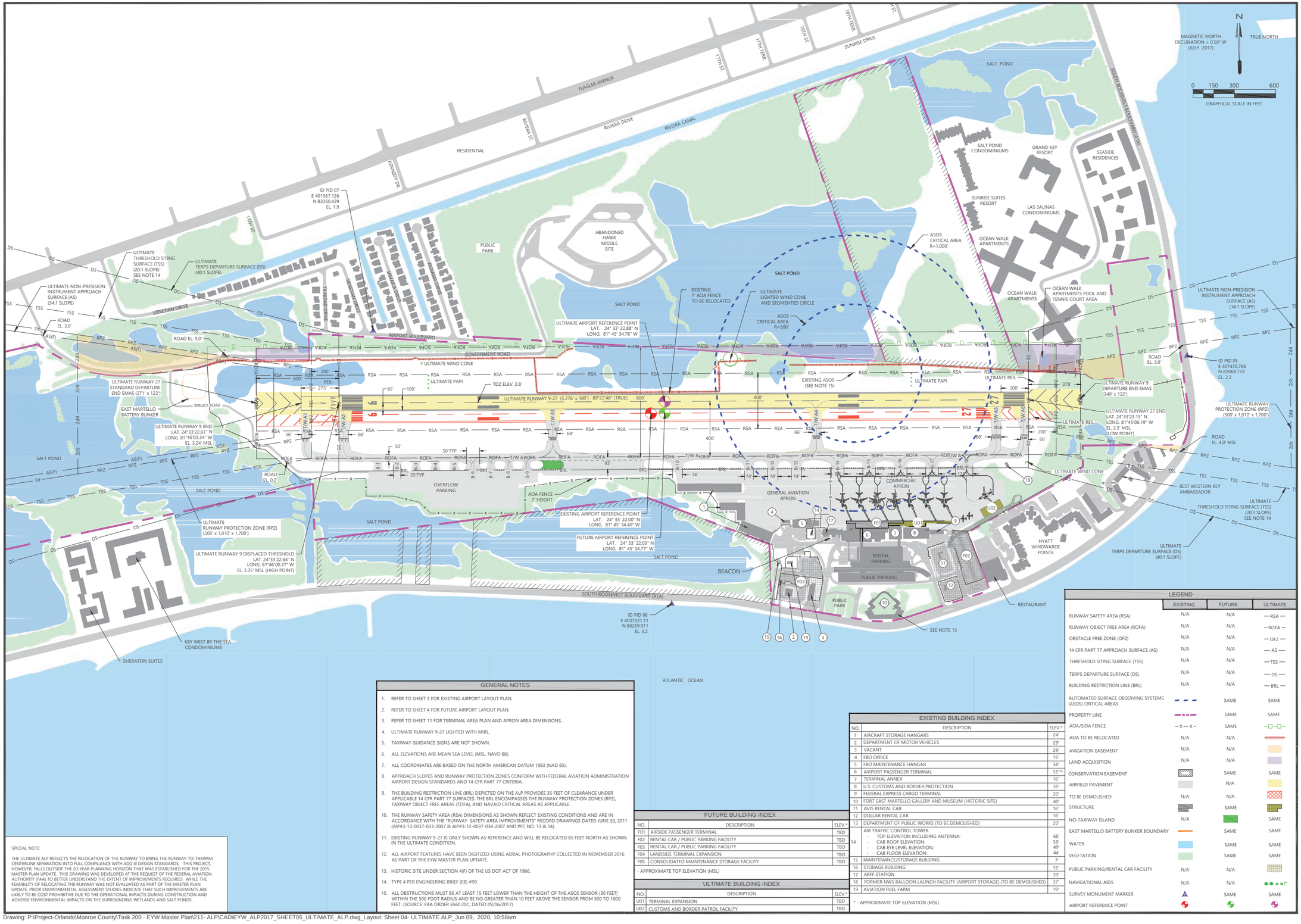
DRAWN BY: JA
CHECKED BY: SC

PREPARED BY:
RICONDO & ASSOCIATES, INC.

DATE:
JANUARY 2020

SHEET 4 OF 13

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\211- ALP\CAD\EYW_ALP2017_SHEET04_FUTURE_ALP.dwg_Layout: Sheet 04 - ALP_Jan 03, 2020, 1:09pm



GENERAL NOTES

1. REFER TO SHEET 3 FOR EXISTING AIRPORT LAYOUT PLAN.
2. REFER TO SHEET 4 FOR FUTURE AIRPORT LAYOUT PLAN.
3. REFER TO SHEET 11 FOR TERMINAL AREA PLAN AND APRON AREA DIMENSIONS.
4. ULTIMATE RUNWAY 9-27 LIGHTED WITH MIRL.
5. TAXIWAY GUIDANCE SIGNS ARE NOT SHOWN.
6. ALL ELEVATIONS ARE MEAN SEA LEVEL (MSL, NAVD 88).
7. ALL COORDINATES ARE BASED ON THE NORTH AMERICAN DATUM 1983 (NAD 83).
8. APPROACH SLOPES AND RUNWAY PROTECTION ZONES CONFORM WITH FEDERAL AVIATION ADMINISTRATION AIRPORT DESIGN STANDARDS AND 14 CFR PART 77 CRITERIA.
9. THE BUILDING RESTRICTION LINE (BRL) DEPICTED ON THE ALP PROVIDES 35 FEET OF CLEARANCE UNDER APPLICABLE 14 CFR PART 77 SURFACES. THE BRL ENCOMPASSES THE RUNWAY PROTECTION ZONES (RPZ), TAXIWAY OBJECT FREE AREAS (TOFA), AND NAVAID CRITICAL AREAS AS APPLICABLE.
10. THE RUNWAY SAFETY AREA (RSA) DIMENSIONS AS SHOWN REFLECT EXISTING CONDITIONS AND ARE IN ACCORDANCE WITH THE "RUNWAY SAFETY AREA IMPROVEMENTS" RECORD DRAWINGS DATED JUNE 30, 2011 (AIP#3-12-0037-033-2007 & AIP#3-12-0037-034-2007 AND PFC NO. 13 & 14).
11. EXISTING RUNWAY 9-27 IS ONLY SHOWN AS REFERENCE AND WILL BE RELOCATED 85 FEET NORTH AS SHOWN IN THE ULTIMATE CONDITION.
12. ALL AIRPORT FEATURES HAVE BEEN DIGITIZED USING AERIAL PHOTOGRAPHY COLLECTED IN NOVEMBER 2016 AS PART OF THE EYW MASTER PLAN UPDATE.
13. HISTORIC SITE UNDER SECTION 4(F) OF THE US DOT ACT OF 1966.
14. TYPE 4 PER ENGINEERING BRIEF (EB) #99.
15. ALL OBSTRUCTIONS MUST BE AT LEAST 15 FEET LOWER THAN THE HEIGHT OF THE ASOS SENSOR (30 FEET) WITHIN THE 500 FOOT RADIUS AND BE NO GREATER THAN 10 FEET ABOVE THE SENSOR FROM 500 TO 1000 FEET. (SOURCE: FAA ORDER 6560.20C, DATED 09/06/2017)

SPECIAL NOTE:

THE ULTIMATE ALP REFLECTS THE RELOCATION OF THE RUNWAY TO BRING THE RUNWAY-TO-TAXIWAY CENTERLINE SEPARATION INTO FULL COMPLIANCE WITH ADG III DESIGN STANDARDS. THIS PROJECT, HOWEVER, FALLS OUTSIDE THE 20-YEAR PLANNING HORIZON THAT WAS ESTABLISHED FOR THE 2015 MASTER PLAN UPDATE. THIS DRAWING WAS DEVELOPED AT THE REQUEST OF THE FEDERAL AVIATION AUTHORITY (FAA) TO BETTER UNDERSTAND THE EXTENT OF IMPROVEMENTS REQUIRED. WHILE THE FEASIBILITY OF RELOCATING THE RUNWAY WAS NOT EVALUATED AS PART OF THE MASTER PLAN UPDATE, PRIOR ENVIRONMENTAL ASSESSMENT STUDIES INDICATE THAT SUCH IMPROVEMENTS ARE LIKELY TO BE COST PROHIBITIVE DUE TO THE OPERATIONAL IMPACTS DURING CONSTRUCTION AND ADVERSE ENVIRONMENTAL IMPACTS ON THE SURROUNDING WETLANDS AND SALT PONDS.

FUTURE BUILDING INDEX

NO.	DESCRIPTION	ELEV.*
F01	AIRSIDE PASSENGER TERMINAL	TBD
F02	RENTAL CAR / PUBLIC PARKING FACILITY	TBD
F03	RENTAL CAR / PUBLIC PARKING FACILITY	TBD
F04	LANDSIDE TERMINAL EXPANSION	TBD
F05	CONSOLIDATED MAINTENANCE STORAGE FACILITY	TBD

* - APPROXIMATE TOP ELEVATION (MSL)

ULTIMATE BUILDING INDEX

NO.	DESCRIPTION	ELEV.*
U01	TERMINAL EXPANSION	TBD
U02	CUSTOMS AND BORDER PATROL FACILITY	TBD

EXISTING BUILDING INDEX

NO.	DESCRIPTION	ELEV.*
1	AIRCRAFT STORAGE HANGARS	24'
2	DEPARTMENT OF MOTOR VEHICLES	29'
3	VACANT	29'
4	FBO OFFICE	15'
5	FBO MAINTENANCE HANGAR	34'
6	AIRPORT PASSENGER TERMINAL	55'**
7	TERMINAL ANNEX	16'
8	U.S. CUSTOMS AND BORDER PROTECTION	35'
9	FEDERAL EXPRESS CARGO TERMINAL	20'
10	FORT EAST MARTELLO GALLERY AND MUSEUM (HISTORIC SITE)	40'
11	AVIS RENTAL CAR	16'
12	DOLLAR RENTAL CAR	16'
13	DEPARTMENT OF PUBLIC WORKS (TO BE DEMOLISHED)	20'
14	AIR TRAFFIC CONTROL TOWER - TOP ELEVATION INCLUDING ANTENNA: 68' - CAB ROOF ELEVATION: 59' - CAB EYE LEVEL ELEVATION: 49' - CAB FLOOR ELEVATION: 44'	
15	MAINTENANCE/STORAGE BUILDING	7'
16	STORAGE BUILDING	15'
17	ARFF STATION	39'
18	FORMER NWS BALLOON LAUNCH FACILITY (AIRPORT STORAGE) (TO BE DEMOLISHED)	37'
19	AVIATION FUEL FARM	19'

* - APPROXIMATE TOP ELEVATION (MSL)

LEGEND

	EXISTING	FUTURE	ULTIMATE
RUNWAY SAFETY AREA (RSA)	N/A	N/A	RSA
RUNWAY OBJECT FREE AREA (ROFA)	N/A	N/A	ROFA
OBSTACLE FREE ZONE (OFZ)	N/A	N/A	OFZ
14 CFR PART 77 APPROACH SURFACE (AS)	N/A	N/A	AS
THRESHOLD SITING SURFACE (TSS)	N/A	N/A	TSS
TERPS DEPARTURE SURFACE (DS)	N/A	N/A	DS
BUILDING RESTRICTION LINE (BRL)	N/A	N/A	BRL
AUTOMATED SURFACE OBSERVING SYSTEMS (ASOS) CRITICAL AREAS		SAME	SAME
PROPERTY LINE		SAME	SAME
AOA/SIDA FENCE	X	SAME	
AOA TO BE RELOCATED	N/A	N/A	
AVIGATION EASEMENT	N/A	N/A	
LAND ACQUISITION	N/A	N/A	
CONSERVATION EASEMENT		SAME	SAME
AIRFIELD PAVEMENT		N/A	
TO BE DEMOLISHED	N/A	N/A	
STRUCTURE		SAME	SAME
NO-TAXIWAY ISLAND	N/A		SAME
EAST MARTELLO BATTERY BUNKER BOUNDARY		SAME	SAME
WATER		SAME	SAME
VEGETATION		SAME	SAME
PUBLIC PARKING/RENTAL CAR FACILITY	N/A	N/A	
NAVIGATIONAL AIDS	N/A	N/A	
SURVEY MONUMENT MARKER		SAME	SAME
AIRPORT REFERENCE POINT			

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NO.	REVISIONS	DATE

ULTIMATE AIRPORT LAYOUT PLAN

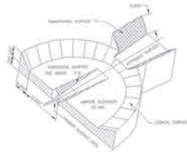
KEY WEST INTERNATIONAL AIRPORT
KEY WEST, FLORIDA

DRAWN BY: JA
CHECKED BY: SC

PREPARED BY:
RICONDO & ASSOCIATES, INC.

DATE:
JANUARY 2020

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\211- ALP\CAD\EYW_ALP2017_SHEET05_ULTIMATE_ALP.dwg_Layout: Sheet 04- ULTIMATE ALP_Jun 09, 2020, 10:58am



IMAGINARY SURFACES PART 77

PART 77 CLASSIFICATION		RUNWAY 9 OTHER THAN UTILITY NPI	RUNWAY 27 OTHER THAN UTILITY NPI
APPROACH VISIBILITY MINS.		300'- 1 MILE	300'- 1 MILE
PRIMARY SURFACES	WIDTH LENGTH	500' 200' BEYOND RUNWAY END	500' 200' BEYOND RUNWAY END
APPROACH SURFACES	SLOPE INNER WIDTH OUTER WIDTH LENGTH DISTANCE FROM THRESHOLD	34:1 500' 3,500' 10,000' 200'	34:1 500' 3,500' 10,000' 200'
RUNWAY END ELEVATIONS (FT. MSL)		EXISTING: 3.29'	EXISTING: 2.94'
RUNWAY END COORDINATES		N: 81639.2485 E: 431044.32	N: 81664.9293 E: 436120.07
RUNWAY LENGTH		EXISTING: 5,075.83 FUTURE: 5, 275.83	

NOTES:

(1.) DRAWING ONLY DEPICTS OBSTACLES PENETRATING THE HORIZONTAL AND CONICAL PART 77 SURFACES. DUE TO THE LARGE NUMBERS OF CLOSE IN OBSTACLES, AN INSET AND CONTINUATION OF THIS DRAWING IS PROVIDED AS SHEET 7.

(2.) SEE INNER APPROACH DRAWINGS 9 AND 10 FOR DETAILED OBSTRUCTIONS TO APPROACH SURFACE. SEE SHEET 8 FOR OBSTRUCTION DATA.

(3.) OBSTACLE ANALYSIS CONDUCTED BY MARTINEZ GEOSPATIAL BASED ON AERIAL MAPPING OBTAINED FROM SANBORN MAPPING COMPANY, APRIL 30, 2016.

(4.) ESTABLISHED AIRPORT ELEVATION = 3.35' MSL.

(5.) BASE MAP SOURCE: AERIAL IMAGERY OBTAINED FROM SANBORN MAPPING COMPANY, APRIL 30, 2016.

(6.) LOCAL ZONING ORDINANCE ESTABLISHED FOR PART 77 PROTECTED AIRSPACE SURFACES. SEE KEY WEST, FLORIDA CODE OF ORDINANCES SEC. 122-1438. AIRPORT ZONES AND AIRPORT HEIGHT LIMITATIONS.

(7.) RUNWAY END ELEVATIONS OBTAINED FROM AS BUILT SURVEY COMPLETED BY DOUGLASS, LEAVY & ASSOCIATES IN JUNE 2018.

Florida Keys Community College Campus
OUTER EDGE OF HORIZONTAL SURFACE ELEVATION = 153.3' MSL (150' ABOVE AIRPORT ELEVATION + 3.3' MSL)
Gerald Adams Elementary
Key West Landfill
Lower Florida Keys Medical Center
Sigsbee Elementary School
Keys Energy Services Substation
Florida Keys Aqueduct Authority
Backpumping Station
Richard A. Heyman Environmental Pollution Control Facility
Wastewater Treatment Plant
Keys Energy Services Substation
Tommy Roberts Stadium
Poinciana Elementary School
Key Energy Services
Generating Plant
Detailed Information for Runway 9 End Obstructions Provided in Drawing 9
Detailed Information for Runway 27 End Obstructions Provided in Drawing 10
Key West City Hall
Horace O'Bryant Middle School
Outer Edge of Horizontal Surface 153.3' MSL
Outer Edge of Horizontal Surface 153.3' MSL
EXTENDED CENTERLINE RUNWAY 9
EXTENDED CENTERLINE RUNWAY 27
Monroe County Courthouse
Key West High School
Inner Transitional Surface (7:1 Slope)
Non-Precision Instrument Approach Surface (34:1 Slope)
Non-Precision Instrument Approach Surface (34:1 Slope)
155' MSL
200' MSL
250' MSL
300' MSL
353.3' MSL
OUTER EDGE OF CONICAL SUFACE ELEVATION = 353.3' MSL

0 750 1500 3000
GRAPHICAL SCALE IN FEET
1" = 1,500'

N
MAGNETIC NORTH DECLINATION = 5° 50' W (JULY 2017)
TRUE NORTH

LEGEND	
	Part 77 Approach Surface
	Part 77 Primary Surface
	Part 77 Transitional Surface
	Part 77 Horizontal Surface
	Part 77 Conical Surface
	Extended Runway Centerline
	Location of Significant Facility
	Airport Property Boundary
	Municipal Boundaries - City of Key West
	Obstruction
	Removed Obstruction

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14 CFR PART 77 AIRPORT AIRSPACE PLAN

KEY WEST INTERNATIONAL AIRPORT
KEY WEST, FLORIDA

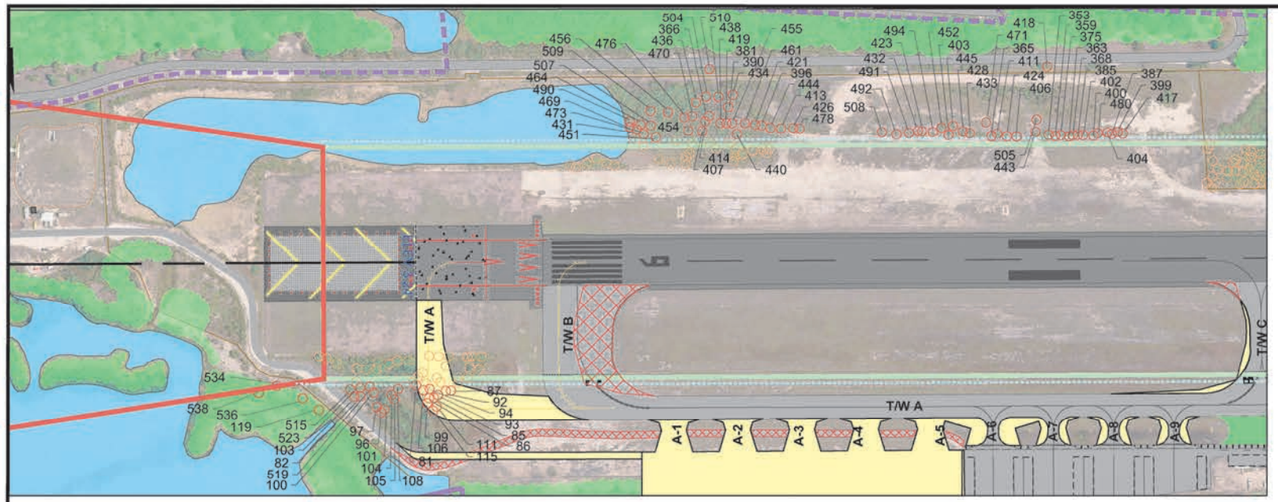
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CHECKED BY: HHM

PREPARED BY:
JACOBS

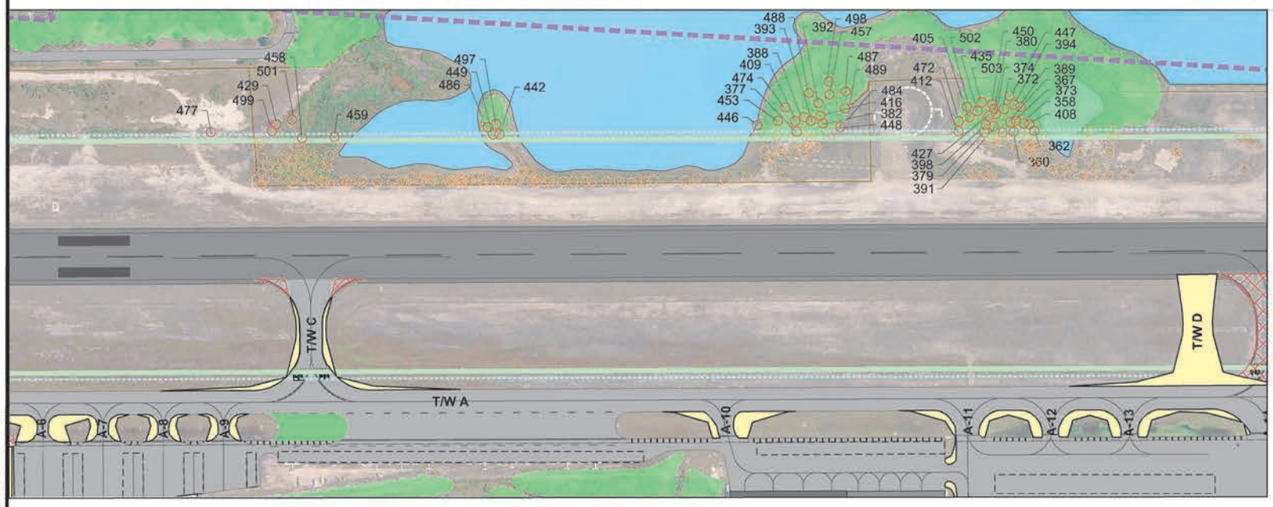
DATE:
JANUARY 2020

SHEET 6 OF 13

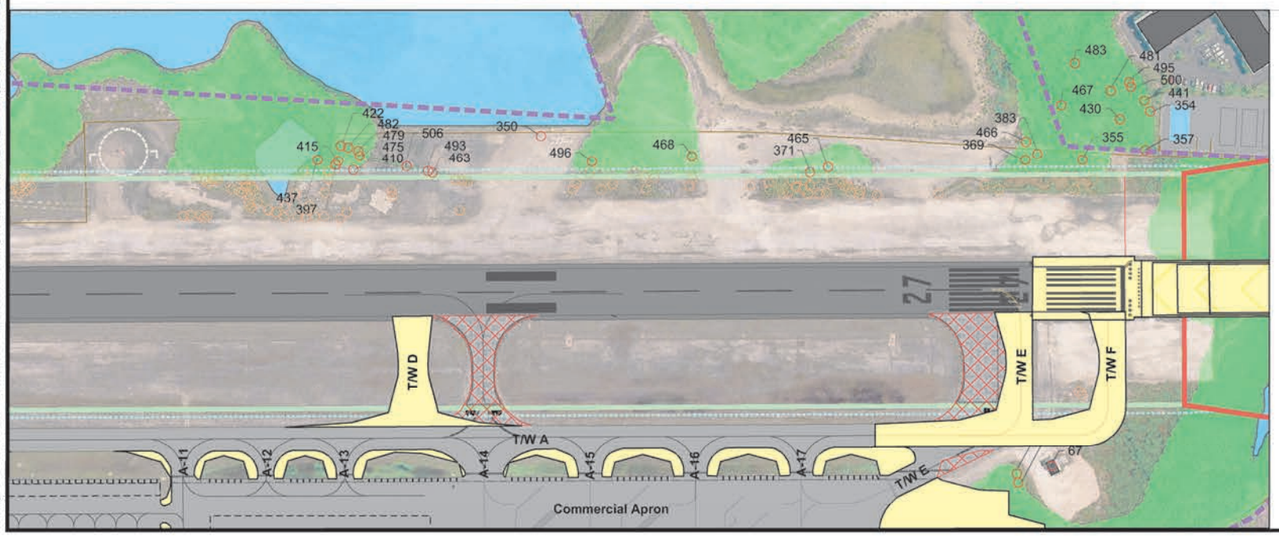
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Runway 9
Obstruction Inset I *West*



Runway 9-27
Obstruction Inset II *Central*



Runway 27
Obstruction Inset III *East*

NOTES:

(1.) SEE INNER APPROACH DRAWINGS 9 AND 10 FOR DETAILED OBSTRUCTIONS TO APPROACH SURFACE. SEE SHEET 8 FOR OBSTRUCTION DATA.

(2.) OBSTACLE ANALYSIS CONDUCTED BY MARTINEZ GEOSPATIAL BASED ON AERIAL MAPPING OBTAINED FROM SANBORN MAPPING COMPANY, APRIL 30, 2016.

(3.) ESTABLISHED AIRPORT ELEVATION = 3.35' MSL.

(4.) BASE MAP SOURCE: AERIAL IMAGERY OBTAINED FROM SANBORN MAPPING COMPANY, APRIL 30, 2016.

(5.) LOCAL ZONING ORDINANCE ESTABLISHED FOR PART 77 PROTECTED AIRSPACE SURFACES. SEE KEY WEST, FLORIDA CODE OF ORDINANCES SEC. 122-1438. AIRPORT ZONES AND AIRPORT HEIGHT LIMITATIONS.

(6.) RUNWAY END ELEVATIONS OBTAINED FROM AS BUILT SURVEY COMPLETED BY DOUGLASS, LEAVY & ASSOCIATES IN JUNE 2018.

0 75 150 300
1" = 150'

N

MAGNETIC NORTH
DECLINATION = 5° 50' W
(JULY 2017)

TRUE NORTH

LEGEND	
	Part 77 Approach Surface
	Part 77 Primary Surface
	Part 77 Transitional Surface
	Extended Runway Centerline
	Airport Property Boundary
	Obstruction
	Removed Obstruction
	Future Airfield Pavement
	Airfield Pavement to be Demolished

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14 CFR PART 77 AIRPORT AIRSPACE PLAN

KEY WEST INTERNATIONAL AIRPORT
KEY WEST, FLORIDA

DRAWN BY: BCB
CHECKED BY: HHM

PREPARED BY:
JACOBS

DATE:
JANUARY 2020

Drawing: P:\2016\EYK16747 - EYW Master Plan\7000CADD\Drawings\KeyWestAirspace_Set_Final.dwg, Layout: Airspace II, Aug 12, 2019, 4:42pm

14 CFR PART 77
AIRSPACE DATA SHEET

Point ID	Obstruction Information	Northing	Easting	Elevation (MSL ft.)	Surface Elevation (MSL ft.)	Surface Penetration (ft.)	Surface	Priority Level	Obstacle Located ON or OFF Airport	Under Sponsor Control	Mitigation Due Date	Recommended Action
103	TREETOP	81350.785	400911.745	12.4	9.9	2.5	14 CFR Part 77 Transitional Surface	LOW	ON	YES	<=1 YEAR	TO BE REMOVED
104	TREETOP	81354.831	400992.586	11	8.72	2.28	14 CFR Part 77 Transitional Surface	LOW	ON	YES	<=1 YEAR	TO BE REMOVED
105	TREETOP	81344.746	400998.287	12.1	10.11	1.99	14 CFR Part 77 Transitional Surface	LOW	ON	YES	<=1 YEAR	TO BE REMOVED
106	TREETOP	81364.556	401061.26	8.8	6.86	1.94	14 CFR Part 77 Transitional Surface	LOW	ON	YES	<=1 YEAR	TO BE REMOVED
108	TREETOP	81307.547	401000.866	8.7	6.81	1.89	14 CFR Part 77 Transitional Surface	LOW	ON	YES	<=1 YEAR	TO BE REMOVED
111	TREETOP	81329.145	401080.895	13.1	11.69	1.41	14 CFR Part 77 Transitional Surface	LOW	ON	YES	<=1 YEAR	TO BE REMOVED
115	TREETOP	81320.575	401082.274	14.1	12.9	1.2	14 CFR Part 77 Transitional Surface	LOW	ON	YES	<=1 YEAR	TO BE REMOVED
116	TREETOP	81247.859	406089.113	27.7	26.51	1.19	14 CFR Part 77 Transitional Surface	LOW	ON	YES	<=1 YEAR	TO BE REMOVED
119	TREETOP	81322.366	400835.922	15	14.43	0.57	14 CFR Part 77 Transitional Surface	LOW	ON	YES	<=1 YEAR	TO BE REMOVED
432	TREETOP	81924.341	402128.65	10	7.15	2.85	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
433	TREETOP	81919.248	402240.31	9.2	6.35	2.85	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
434	TREETOP	82001.659	401728.934	21.2	18.39	2.81	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
435	TREETOP	81960.613	404307.797	13.4	10.6	2.8	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
436	TREETOP	81985.441	401649.439	19	16.23	2.77	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
437	TREETOP	81944.369	404576.989	10.7	8.06	2.64	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
438	TREETOP	81997.615	401698.067	20.5	17.9	2.6	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
440	TREETOP	81917.417	401737.841	8.9	6.31	2.59	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
441	TREETOP	82072.794	406361.369	27.8	25.23	2.57	14 CFR Part 77 Transitional Surface	LOW	OFF	NO	≤ 1 YEAR	TO BE REMOVED
442	TREETOP	81911.482	403276.275	7	4.44	2.56	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
443	TREETOP	81922.044	402381.879	9.1	6.55	2.55	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
444	TREETOP	81930.534	401810.239	10.7	8.16	2.54	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
445	TREETOP	81935.063	402204.181	11.1	8.59	2.51	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
446	TREETOP	81930.448	403832.416	9.2	6.75	2.45	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
447	TREETOP	81993.851	404376.949	17.7	15.25	2.45	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
448	TREETOP	81926.997	404011.918	8.5	6.1	2.4	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
449	TREETOP	81911.072	403262.67	6.8	4.41	2.39	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
450	TREETOP	81975.648	404339.654	15	12.69	2.31	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
451	TREETOP	81910.745	401563.119	7.8	5.52	2.28	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
452	TREETOP	81931.033	402179.056	10.2	7.99	2.21	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
453	TREETOP	81939.932	403877.261	10.2	8.04	2.16	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
454	TREETOP	81924.642	401633.023	9.6	7.5	2.1	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
455	TREETOP	81940.875	401727.636	11.8	9.7	2.1	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
456	TREETOP	81952.973	401624.625	13.7	11.63	2.07	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
457	TREETOP	81996.231	403988.125	18.1	16.04	2.06	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
458	TREETOP	81902.969	402850.109	5.6	3.55	2.05	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
459	TREETOP	81905.677	402920.254	5.9	3.89	2.01	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
461	TREETOP	81940.968	401755.017	11.6	9.74	1.86	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
463	TREETOP	81916.369	404825.029	5.7	3.88	1.82	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
464	TREETOP	81937.639	401529.975	11.3	9.52	1.78	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
465	TREETOP	81928.419	405678.656	6.8	5.05	1.75	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
466	TREETOP	81983.946	406105.49	14.3	12.6	1.7	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
467	TREETOP	82062.82	406182.109	25.3	23.61	1.69	14 CFR Part 77 Transitional Surface	LOW	OFF	YES	≤ 1 YEAR	TO BE REMOVED
468	TREETOP	81951.792	405384.68	10.2	8.52	1.68	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
469	TREETOP	81932.564	401506.374	10.4	8.72	1.68	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
470	TREETOP	81955.633	401641.467	13.6	11.93	1.67	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
471	TREETOP	81942.64	402275.43	11.3	9.64	1.66	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
472	TREETOP	81938.889	404267.397	9.2	7.56	1.64	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
473	TREETOP	81917.187	401536.489	8.1	6.57	1.53	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
474	TREETOP	81968.454	403892.915	13.6	12.1	1.5	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
475	TREETOP	81953.206	404667.795	10.8	9.31	1.49	14 CFR Part 77 Transitional Surface	LOW	ON	NO	≤ 1 YEAR	TO BE REMOVED
476	TREETOP	81964.368	401588.828	14.6	13.17	1.43	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
477	TREETOP	81915.882	402053.905	6.9	5.54	1.36	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
478	TREETOP	81928.684	401873.059	9.2	7.85	1.35	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
479	TREETOP	81964.303	404665.078	12.2	10.88	1.32	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
480	TREETOP	81919.526	402516.354	7.5	6.21	1.29	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
481	TREETOP	82093.791	406288.784	29.2	27.97	1.23	14 CFR Part 77 Transitional Surface	LOW	OFF	YES	≤ 1 YEAR	TO BE REMOVED
482	TREETOP	81971.678	404643.019	13.1	11.91	1.19	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
483	TREETOP	82153.241	406211.628	37.7	36.54	1.16	14 CFR Part 77 Transitional Surface	LOW	OFF	NO	≤ 1 YEAR	TO BE REMOVED
484	TREETOP	81941.594	404023.555	9.4	8.25	1.15	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
486	TREETOP	81925.911	403251.174	7.5	6.3	0.94	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
487	TREETOP	82002.849	404023.312	17.8	16.1	0.88	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
488	TREETOP	81999.679	403944.142	17.4	16.1	0.88	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
489	TREETOP	81966.568	404021.718	12.6	11.6	0.87	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
490	TREETOP	81944.706	401507.068	11.3	10.1	0.86	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
491	TREETOP	81919.988	402109.259	7.4	6	0.85	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
492	TREETOP	81916.92	402082.283	6.9	5.9	0.82	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
493	TREETOP	81919.804	404815.184	5.2	5.4	0.81	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
494	TREETOP	81921.673	402160.451	7.5	5.8	0.79	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
495	TREETOP	82112.701	406328.629	31.5	30.2	0.77	14 CFR Part 77 Transitional Surface	LOW	OFF	NO	≤ 1 YEAR	TO BE REMOVED
496	TREETOP	81940.997	405168.855	8	7.6	0.74	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
497	TREETOP	81932.723	403268.925	8.2	7.1	0.74	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
498	TREETOP	82024.67	403987.062	20.8	18.8	0.71	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
499	TREETOP	81918.393	402785.51	6.4	6.7	0.67	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
500	TREETOP	82102.571	406332.511	29.9	28.9	0.62	14 CFR Part 77 Transitional Surface	LOW	OFF	NO	≤ 1 YEAR	TO BE REMOVED
501	TREETOP	81942.185	402828.601	9.6	9.2	0.52	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
502	TREETOP	81969.509	404285	12.4	12.5	0.51	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
503	TREETOP	81979.671	404316.92	13.8	13.29	0.51	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
504	TREETOP	81998.003	401670.938	18.5	18	0.5	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
505	TREETOP	81948.657	402384.15	10.9	10.41	0.49	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
506	TREETOP	81930.142	404769.189	6.4	5.91	0.49	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
507	TREETOP	81935.822	401551.818	9.6	9.15	0.45	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
508	TREETOP	81921.482	402050.773	7.1	6.76	0.34	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
509	TREETOP	81967.319	401551.132	13.9	13.68	0.22	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
510	TREETOP	82057.176	401678.29	26.5	26.37	0.13	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
515	TREETOP	81365.871	400903.146	16	6.83	14	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
519	TREETOP	81372.177	400945.917	13.7	5.76	13	15 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
523	TREETOP	81369.809	400925.089	13.7	5.19	12.4	16 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
526	TREETOP	81432.84	400852.305	14.6	3.95	13.4	17 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
532	TREETOP	81975.482	400349.806	26.8	1.42	21.8	18 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
534	TREETOP	81375.769	400743.814	14.9	1.04	14.7	18 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
538	TREETOP	81358.796	400705.791	15.3	0.37	15.5	14 CFR Part 77 Transitional Surface	LOW	ON	YES	≤ 1 YEAR	TO BE REMOVED
541	TOWER	79669.073	388362.096	317.4	287	30.4	14 CFR Part 77 Conical Surface	LOW	OFF	NO	NONE	MARKED/LIT
542	TOWER	77865.588	388953.139	307.9	284.8	23.1	14 CFR Part 77 Conical Surface	LOW	OFF	NO	NONE	MARKED/LIT
543	ANTENNA	85743.034	390720.642	224.5	203.6	20.9	14 CFR Part 77 Conical Surface	LOW	OFF	NO	NONE	MARKED/LIT
544	ANTENNA	91682.438	401595.364	161.1	155.5	5.6	14 CFR Part 77 Conical Surface	LOW	OFF	NO	NONE	MARKED/LIT
545	ANTENNA	89229.962	406186.312	162.3	2.9	159.4	14 CFR Part 77 Horizontal Surface	LOW	OFF	NO	NONE	MARKED/LIT
546	ANTENNA	87328.792	410213.467	156.6	153.3	3.3	14 CFR Part 77 Horizontal Surface	LOW	OFF	NO	NONE	MARKED/LIT
547	ANTENNA	85774.75	407469.194	156.4	153.3	3.1	14 CFR Part 77 Horizontal Surface	LOW	OFF	NO	NONE	MARKED/LIT
548	ANTENNA	85445.649	407491.214	155.9	153.3	2.6	14 CFR Part 77 Horizontal Surface	LOW	OFF	NO	NONE	MARKED/LIT
549	ANTENNA	87280.152	410668.918	153.6	153.3	0.5	14 CFR Part 77 Horizontal Surface	LOW	OFF	NO	NONE	MARKED/LIT

NOTES:

(1.) SEE INNER APPROACH DRAWINGS 9 AND 10 FOR DETAILED OBSTRUCTIONS TO APPROACH SURFACE.

(2.) OBSTACLE ANALYSIS CONDUCTED BY MARTINEZ GEOSPATIAL BASED ON AERIAL MAPPING OBTAINED FROM SANBORN MAPPING COMPANY, APRIL 30, 2016.

(3.) OBSTRUCTIONS PENETRATING RUNWAY OBJECT FREE AREA HAVE BEEN REMOVED

(4.) REMAINING OBSTACLES HAVE BEEN ASSIGNED A PRIORITY RATING LEVEL AND MITIGATION DUE DATE TO ENSURE EFFICIENT REMOVAL OF OBSTRUCTIONS IN A TIMELY MANNER.

LOW PRIORITY *Obstructions to be Mitigated in 1 Year or Less*

MEDIUM PRIORITY *Obstructions to be Mitigated in 180 Days or Less*

HIGH PRIORITY *Obstructions to be Mitigated As Soon As Practicable*

Point ID	Obstruction Information	Northing	Easting	Elevation (MSL ft.)	Surface Elevation (MSL ft.)	Surface Penetration (ft.)	Surface	Priority Level	Obstacle Located ON or OFF Airport	Under Sponsor Control	Mitigation Due Date	Recommended Action
59	LIGHT POLE	80823.45	405177.4	105	86.61	18.39	14 CFR Part 77 Transitional Surface	HIGH	ON	YES	ASAP	MARK/LIGHT
60	LIGHT POLE	80820.49	405404.4	104.8	87.11	17.69	14 CFR Part 77 Transitional Surface	HIGH	ON	YES	ASAP	MARK/LIGHT
61	LIGHT POLE	80807.64	404980	105.4	88.74	16.66	14 CFR Part 77 Transitional Surface	HIGH	ON	YES	ASAP	MARK/LIGHT
63	LIGHT POLE	80813.96	405601.5	103.2	88.18	15.02	14 CFR Part 77 Transitional Surface	HIGH	ON	YES	ASAP	MARK/LIGHT
67	BUILDING ELEVATION	81283.85	406161.2	33.6	21.28	12.32	14 CFR Part 77 Transitional Surface	HIGH	ON	YES	ASAP	TO BE REMOVED
350	UNDETERMINED	81996.37	405058.9	32.4	15.18	17.22	14 CFR Part 77 Transitional Surface	HIGH	ON	YES	ASAP	MARK/LIGHT
73	LIGHT POLE	80874.92	404527	88.5	78.82	9.68	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	MARK/LIGHT
81	TREETOP	81374.79	401045.7	13.2	5.46	7.74	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
82	TREETOP	81351.41	400925.6	16.5	9.7	6.8	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
85	TREETOP	81348.34	401084.2	14.7	8.96	5.74	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
86	TREETOP	81347.53	401073.4	14.6	9.11	5.49	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
87	TREETOP	81363.76	401120.7	12	6.54	5.46	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
92	TREETOP	81362.99	401109.5	11.1	6.69	4.41	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
93	TREETOP	81354.39	401093	12.4	8.03	4.37	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
94	TREETOP	81367.37	401074.9	10.7	6.35	4.35	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
95	TREETOP	81266.89	406086.3	27.9	23.79	4.11	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
96	TREETOP	81316.46	400970.5	18.1	14.33	3.77	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
97	TREETOP	81328.33	400960.5	16.4	12.73	3.67	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
99	TREETOP	81336.96	401069.8	14	10.66	3.34	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
100	TREETOP	81359.3	400954.4	11.6	8.31	3.29	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
101	TREETOP	81323.25	400976.8	16.5	13.35	3.15	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
353	TREETOP	81916.13	402410.3	16.7	5.76	10.94	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
354	TREETOP	82049.63	406373.7	31.7	22.03	9.67	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
355	TREETOP	81944.78	406227.8	16.1	6.69	9.41	14 CFR Part 77 Transitional Surface	MEDIUM	OFF	NO	<=180 DAYS	TO BE REMOVED
356	TREETOP	82278.76	401159.4	67.6	58.35	9.25	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
357	TREETOP	81965.99	406362.9	18.6	10.03	8.57	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
358	TREETOP	81934.15	404407.4	15.2	6.73	8.47	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
359	TREETOP	81913.52	402424.9	13.8	5.34	8.46	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
360	TREETOP	81916.41	404386	11.8	4.2	7.6	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
361	TREETOP	81915.2	404362.2	11.6	4.01	7.59	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
362	TREETOP	81918.37	404430.3	11.8	4.45	7.35	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
363	TREETOP	81912.39	402454.8	12.4	5.18	7.22	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
365	TREETOP	81913.58	402287	12.5	5.45	7.05	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
366	TREETOP	81956.42	401677.5	18.9	11.97	6.93	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
367	TREETOP	81937.27	404378.8	14	7.14	6.86	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
368	TREETOP	81915.38	402462.7	12.5	5.69	6.81	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
369	TREETOP	81944.13	406104.4	13.6	6.86	6.74	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
370	TREETOP	82205.56	401241.7	54.5	47.84	6.66	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
371	TREETOP	81917.17	405639.4	9.9	3.36	6.54	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
372	TREETOP	81965.17	404365.3	17.7	11.17	6.53	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
373	TREETOP	81940.35	404391.3	14	7.59	6.41	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
374	TREETOP	81954.75	404347.4	16.1	9.72	6.38	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
375	TREETOP	81915.25	402436.7	11.7	5.58	6.12	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
377	TREETOP	81916.86	403917.8	10.7	4.78	5.92	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
379	TREETOP	81915.42	404322.5	9.8	4.09	5.71	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
380	TREETOP	81965.37	404343.7	16.9	11.26	5.64	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
381	TREETOP	81941.02	401715.5	15.3	9.77	5.53	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
382	TREETOP	81934.79	403973.8	12.7	7.25	5.45	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
383	TREETOP	81957.75	406130	14.1	8.68	5.42	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
385	TREETOP	81915.62	402473.1	11	5.68	5.32	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
386	TREETOP	81912.73	403992.7	9.4	4.1	5.3	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
387	TREETOP	81917.62	402547	11.2	5.92	5.28	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
388	TREETOP	81948.18	403933.4	14.4	9.2	5.2	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
389	TREETOP	81969.91	404400.8	16.9	11.8	5.1	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
390	TREETOP	81975.4	401719	19.7	14.62	5.08	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
391	TREETOP	81928.39	404342.8	11	5.93	5.07	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
392	TREETOP	81977.64	403964.8	18.4	13.35	5.05	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
393	TREETOP	81940.18	403948.2	12.9	8	4.9	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
394	TREETOP	81973.96	404386.9	17.3	12.44	4.86	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
395	TREETOP	81917.35	405260.1	8.5	3.71	4.79	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	<=180 DAYS	TO BE REMOVED
396	TREETOP	81936.09	401791.2	13.7	8.95	4.75	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
397	TREETOP	81933.55	404616.1	11.2	6.53	4.67	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
398	TREETOP	81930.49	404326.1	10.9	6.26	4.64	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
399	TREETOP	81921.88	402559.9	11.1	6.49	4.61	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
400	TREETOP	81914.28	402507.1	10	5.44	4.56	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
401	TREETOP	82027.47	406676.1	25.6	21.1	4.5	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
402	TREETOP	81915.25	402484.8	10.1	5.6	4.5	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
403	TREETOP	81915.59	402194.5	10.3	5.82	4.48	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
404	TREETOP	81920.78	402537.5	10.8	6.37	4.43	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
405	TREETOP	81947.49	404290.9	13	8.73	4.27	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
406	TREETOP	81912.44	402341.3	9.4	5.25	4.15	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
407	TREETOP	81923.4	401663	11.3	7.27	4.03	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
408	TREETOP	81932.16	404420.4	10.4	6.39	4.01	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
409	TREETOP	81939.41	403914.3	11.9	7.98	3.92	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
410	TREETOP	81922.3	404654.1	8.8	4.9	3.9	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
411	TREETOP	81918.17	402299.5	9.9	6.04	3.86	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
412	TREETOP	81917.33	404267.1	8.2	4.42	3.78	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
413	TREETOP	81929.15	401832.9	11.7	7.92	3.78	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
414	TREETOP	81944.49	401668.8	14.1	10.33	3.77	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
415	TREETOP	81941.98	404621.4	11.4	7.65	3.75	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
416	TREETOP	81950.56	403968.6	13.2	9.53	3.67	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
417	TREETOP	81918.66	402570.5	9.6	5.97	3.63	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
418	TREETOP	82062.93	402407.3	30.3	26.73	3.57	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
419	TREETOP	81940.9	401701.8	13.3	9.75	3.55	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
420	TREETOP	81914.09	405163.1	6.9	3.4	3.5	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
421	TREETOP	81937.53	401777.2	12.7	9.22	3.48	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
422	TREETOP	81975.55	404627.2	16	12.53	3.47	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
423	TREETOP	81923.39	402137.3	10.4	7.02	3.38	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
424	TREETOP	81913.06	402320.6	8.7	5.36	3.34	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
425	TREETOP	81903.14	401605.5	7.8	4.5	3.3	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
426	TREETOP	81930.16	401859.3	11.4	8.1	3.3	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
427	TREETOP	81950.74	404332.6	12.5	9.21	3.29	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
428	TREETOP	81923.07	402225.2	10	6.85	3.15	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
429	TREETOP	81932.43	402794.4	10.8	7.74	3.06	14 CFR Part 77 Transitional Surface	MEDIUM	ON	YES	≤ 180 DAYS	TO BE REMOVED
430	TREETOP	82032.47	406308.4	22.2	19.14	3.06	14 CFR Part 77 Transitional Surface	MEDIUM	OFF	NO	≤ 180 DAYS	TO BE REMOVED

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NO.	REVISIONS	DATE

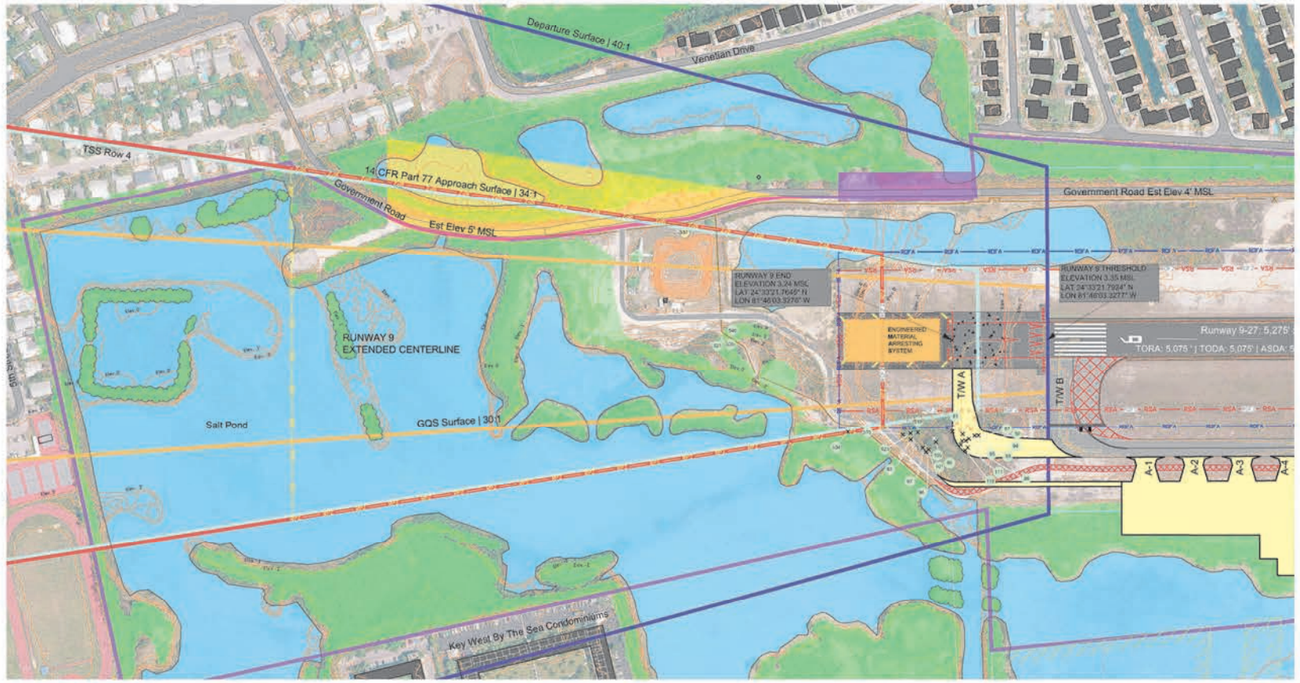
14 CFR PART 77
AIRSPACE DATA SHEET
KEY WEST INTERNATIONAL AIRPORT
KEY WEST, FLORIDA

DRAWN BY: BCB
CHECKED BY: HHM

PREPARED BY:
JACOBS

DATE:
JANUARY 2020

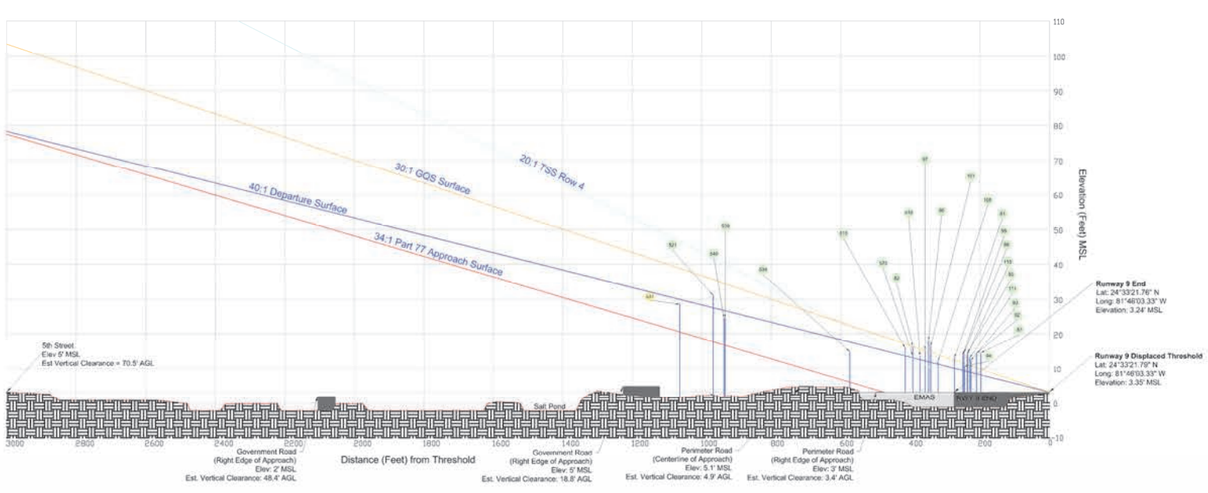
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Runway 9 Obstruction Data Table

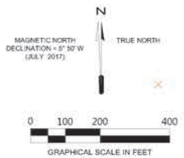
Obstruction Information					14 CFR Part 77 Approach – RWY 9		Runway 27 Departure Surface (5 Feet)		Threshold Sighting Surface Row 4*		Glidepath Qualification Surface (GQS)*					
Point ID	Obstruction Information	Northing	Easting	Elevation (MSL ft.)	Surface Elevation (MSL ft.)	Surface Penetration (ft.)	Surface Elevation (MSL ft.)	Surface Penetration (ft.)	Surface Elevation (MSL ft.)	Surface Penetration (ft.)	Surface Elevation (MSL ft.)	Surface Penetration (ft.)	Obstacle Located ON or OFF Airport	Under Sponsor Control	Mitigation Due Date	Recommended Action
81	TREETOP	81374.8	401046.7	13.2	N/A*	N/A*	15.3	2.0	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
82	TREETOP	81361.6	400926.8	16.6	N/A*	N/A*	19.3	2.7	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
85	TREETOP	81349.3	401084.2	14.7	N/A*	N/A*	9.1	5.4	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
86	TREETOP	81347.5	401073.4	14.6	N/A*	N/A*	8.6	5.0	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
87	TREETOP	81363.6	401120.7	12	N/A*	N/A*	8.6	3.6	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
92	TREETOP	81393	401109.5	11.1	N/A*	N/A*	9.7	2.4	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
93	TREETOP	81364.4	401091	12.4	N/A*	N/A*	9.1	3.3	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
94	TREETOP	81387.4	401074.9	10.7	N/A*	N/A*	9.5	1.2	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
96	TREETOP	81316.5	400970.9	18.1	N/A*	N/A*	12.2	5.9	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
97	TREETOP	81406.8	401186.2	13.4	N/A*	N/A*	12.4	1.0	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
99	TREETOP	81337	401069.8	14	N/A*	N/A*	9.7	4.4	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
101	TREETOP	81323.8	400978.8	16.9	N/A*	N/A*	12.0	4.5	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
108	TREETOP	81384.7	401008.3	17.1	N/A*	N/A*	11.6	5.1	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
111	TREETOP	81329.1	401089.1	13.1	N/A*	N/A*	9.2	4.0	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
115	TREETOP	81320.6	401092.3	14.1	N/A*	N/A*	9.4	4.8	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
516	TREETOP	81385.6	400933.1	16	N/A*	N/A*	13.8	2.2	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
519	TREETOP	81372.2	400945.3	13.7	N/A*	N/A*	12.8	0.9	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
521	TREETOP	81009.7	400950.4	31.1	17.8	13.3	27.8	3.3	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
523	TREETOP	81389.8	400926.1	13.7	N/A*	N/A*	13.3	0.4	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
534	TREETOP	81375.8	400749.8	14.9	9.2	5.7	N/A*	N/A*	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
537	UTILITY POLE	81933.4	400294.8	28.5	20.5	8	N/A*	N/A*	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	MARK/LIGHT
539	TREETOP	81834.5	400588.5	24.9	18.7	7.3	N/A*	N/A*	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED
540	TREETOP	81845	400352	24.6	18.8	7.8	N/A*	N/A*	N/A*	N/A*	N/A*	N/A*	ON	YES	Jan 1, 18 AIP	TO BE REMOVED

*DIMENSIONAL STANDARDS APPLICABLE TO THRESHOLD SITING SURFACES BASED ON LATEST VERSION OF TABLE 3-2 AS DIRECTED IN FAA ENGINEERING BRIEF #99 AUTHORIZED 09.20.2019.
*N/A INDICATES OBSTRUCTION DOES NOT PENETRATE SURFACE INDICATED IN THE APPLICABLE COLUMN OF DATA TABLE.



LEGEND

	PART 77 APPROACH SURFACE		TREE OBSTRUCTION		AIRFIELD PAVEMENT
	GLIDEPATH QUALIFICATION SURFACE (GQS)		UTILITY OBSTRUCTION		GROUND PROFILE
	THRESHOLD SITING SURFACE ROW 4		BUILDING OBSTRUCTION		AIRFIELD PAVEMENT TO BE DEMOLISHED
	DEPARTURE SURFACE		RUNWAY OBSTACLE FREE ZONE (OFZ)		EMAS BED
	PARCEL BOUNDARIES		RUNWAY OBJECT FREE AREA (ROFA)		EXTENDED RUNWAY CENTERLINE
	RUNWAY PROTECTION ZONE (RPZ)		RUNWAY SAFETY AREA (RSA)		FUTURE AIRFIELD PAVEMENT
	AIRPORT PROPERTY BOUNDARY		1' GROUND CONTOURS		BUILDING RESTRICTION LINE (BRL)
	AVIGATION EASEMENT		LAND AQUISITION		CONSERVATION EASEMENT



NOTES:

(1.) SEE AIRSPACE DRAWINGS FOR DETAILED OBSTRUCTIONS TO PRIMARY SURFACE. SEE SHEET 8 FOR OBSTRUCTION DATA;

(2.) OBSTACLE ANALYSIS CONDUCTED BY MARTINEZ GEOSPATIAL BASED ON AERIAL MAPPING OBTAINED FROM SANBORN MAPPING COMPANY, APRIL 30, 2016;

(3.) ESTABLISHED AIRPORT ELEVATION = 3.35';

(4.) BASE MAP SOURCE: AERIAL IMAGERY OBTAINED FROM SANBORN MAPPING COMPANY, APRIL 30, 2016;

(5.) LOCAL ZONING ORDINANCE ESTABLISHED FOR PART 77 PROTECTED AIRSPACE SURFACES: SEE KEY WEST, FLORIDA CODE OF ORDINANCES SEC. 122-1438. AIRPORT ZONES AND AIRPORT HEIGHT LIMITATIONS;

(6.) GROUND PROFILE DRAWN FROM CONTOURS OBTAINED BY THE MONROE COUNTY, FLORIDA GEOGRAPHIC INFORMATION SYSTEMS (GIS) DEPARTMENT;

(7.) RUNWAY END ELEVATIONS OBTAINED FROM AS BUILT SURVEY COMPLETED BY DOUGLASS, LEAVY & ASSOCIATES IN JUNE 2018;

(8.) PARCEL BOUNDARIES OBTAINED FROM MONROE COUNTY, FLORIDA DEPARTMENT OF PLANNING AND ENVIRONMENTAL RESOURCES, 2017.

(9.) THIS DRAWING SHOWS ACTUAL ROADWAY ELEVATIONS.

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NO.	REVISIONS	DATE

INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 9

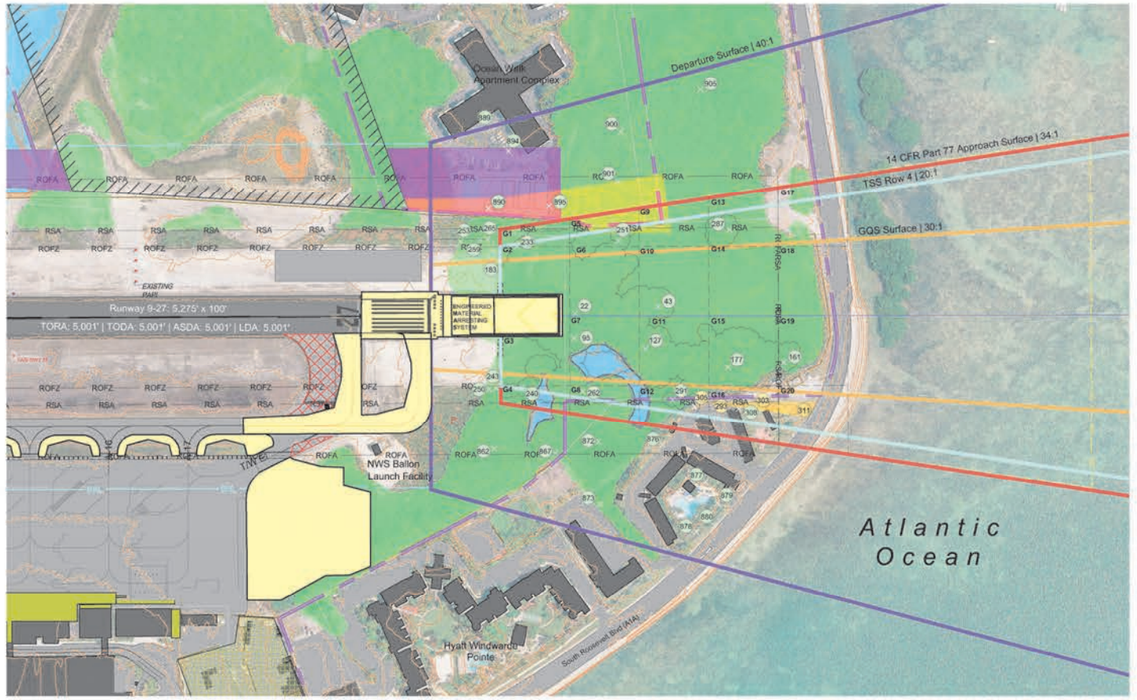
KEY WEST INTERNATIONAL AIRPORT
KEY WEST, FLORIDA

DRAWN BY: BCB
CHECKED BY: HHM

PREPARED BY:
JACOBS

DATE:
JANUARY 2020

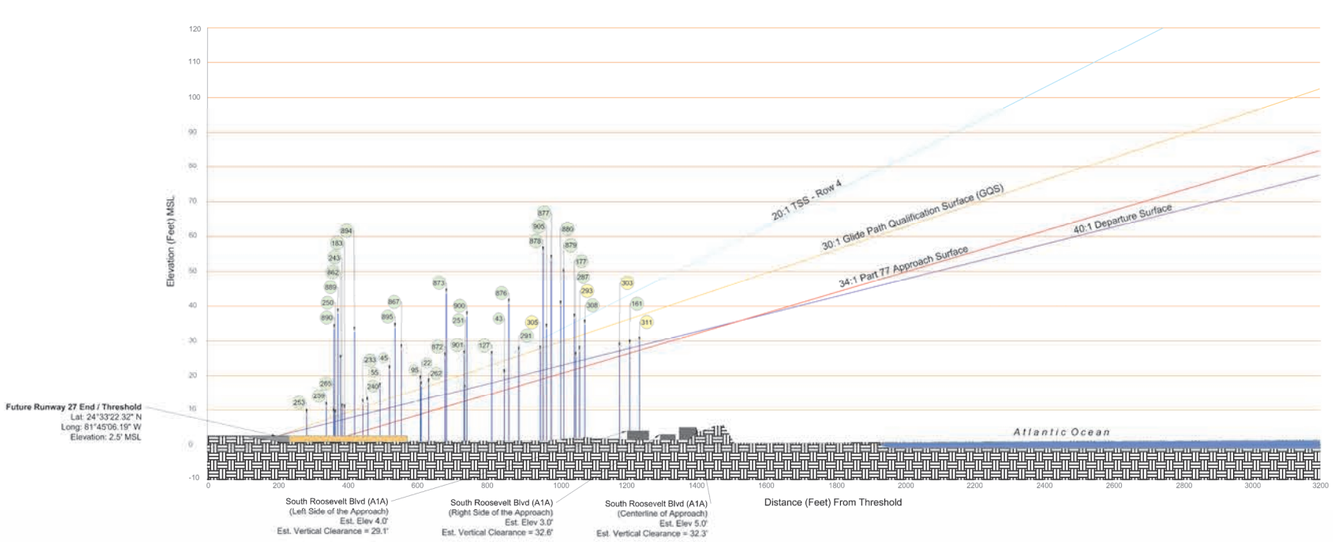
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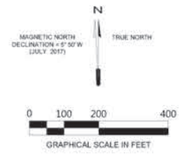
Runway 27 Obstruction Data Table

Obstruction Information						14 CFR Part 77 Approach - RWY 27		Runway 9 Departure Surface (27 End)		Threshold Sighting Surface Row 4*		Glidepath Qualification Surface (GQS)*					
Point ID	Group ID	Obstruction Information	Northing	Easting	Elevation (MSL ft.)	Surface Elevation (MSL ft.)	Surface Penetration (ft.)	Surface Elevation (MSL ft.)	Surface Penetration (ft.)	Surface Elevation (MSL ft.)	Surface Penetration (ft.)	Surface Elevation (MSL ft.)	Surface Penetration (ft.)	Obstacle Located ON or OFF Airport	Under Sponsor Control	Mitigation Due Date	Recommended Action
22	G6	TREETOP	81672.329	406734.267	16.7	N/A*	N/A*	N/A*	N/A*	13.4	3.3	16.4	0.3	ON	NO	≤ 1 YEAR	TO BE REMOVED
43	G10	TREETOP	81692.369	406974.067	20.3	16.0	4.3	18.8	1.5	N/A*	N/A*	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
45	G3	TREETOP	81643.342	406643.237	20.1	6.1	14.0	10.6	9.5	8.6	11.5	13.4	6.7	ON	NO	≤ 1 YEAR	TO BE REMOVED
55	G2	TREETOP	81703.131	406615.405	15.6	N/A*	N/A*	N/A*	N/A*	7.4	8.2	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
95	G7	TREETOP	81602.577	406732.635	18.0	8.7	9.3	N/A*	N/A*	13.1	4.9	16.3	1.7	ON	NO	≤ 1 YEAR	TO BE REMOVED
127	G11	TREETOP	81572.265	406937.284	25.3	14.8	10.5	N/A*	N/A*	23.3	2.0	23.1	2.2	ON	NO	≤ 1 YEAR	TO BE REMOVED
161	G19	TREETOP	81533.392	407334.880	28.8	26.5	2.3	27.8	1.0	N/A*	N/A*	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
177	G15	TREETOP	81518.533	407174.961	36.3	21.8	14.5	23.8	12.5	35.3	1.0	31.1	5.2	ON	NO	≤ 1 YEAR	TO BE REMOVED
183		TREETOP	81823.408	406513.715	9.9	N/A*	N/A*	7.3	2.6	N/A*	N/A*	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
233	G1	TREETOP	81865.691	406566.509	10.9	3.9	7.0	8.7	2.2	4.9	6.0	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
240	G4	TREETOP	81460.101	406580.935	11.4	N/A*	N/A*	N/A*	N/A*	5.5	5.9	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
243		TREETOP	81458.346	406507.498	11.5	N/A*	N/A*	7.2	4.3	N/A*	N/A*	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
250		TREETOP	81455.213	406486.595	8.6	N/A*	N/A*	6.7	1.9	N/A*	N/A*	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
251	G5	TREETOP	81881.722	406859.412	15.9	12.6	3.3	N/A*	N/A*	N/A*	N/A*	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
253		TREETOP	81805.469	403283.976	5.5	N/A*	N/A*	2.1	3.4	N/A*	N/A*	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
259		TREETOP	81883.224	406460.861	10.8	N/A*	N/A*	6.1	4.7	N/A*	N/A*	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
262	G8	TREETOP	81449.374	406755.790	17.3	9.4	7.9	13.5	3.8	14.3	3.0	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
265		TREETOP	81850.057	401377.865	5.3	N/A*	N/A*	4.1	1.3	N/A*	N/A*	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
287	G13	TREETOP	81912.696	407178.890	25.3	22.0	3.3	24.0	1.3	N/A*	N/A*	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
291	G12	TREETOP	81425.277	407015.800	26.4	17.1	9.3	20.0	6.4	N/A*	N/A*	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
293	G16	UTILITY POLE	81424.525	407189.565	26.8	22.2	4.6	24.2	2.6	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	MARK/LIGHT
303	G16	UTILITY POLE	81407.832	407305.520	28.0	25.6	2.4	27.2	0.8	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	MARK/LIGHT
305	G12	UTILITY POLE	81406.528	407077.840	26.7	18.9	7.9	21.5	5.3	N/A*	N/A*	N/A*	N/A*	ON	NO	≤ 1 YEAR	MARK/LIGHT
308	G16	TREETOP	81399.554	407205.106	34.2	27.7	11.5	24.6	9.6	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	TO BE REMOVED
311	G20	UTILITY POLE	81396.499	407361.809	29.6	27.2	2.4	28.6	1.0	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	MARK/LIGHT
862		TREETOP	81282.619	406501.845	24.0	N/A*	N/A*	7.1	16.9	N/A*	N/A*	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
867		TREETOP	81270.391	406677.892	27.0	N/A*	N/A*	11.4	15.6	N/A*	N/A*	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED
872		TREETOP	81301.931	406802.652	24.9	N/A*	N/A*	14.6	10.3	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	TO BE REMOVED
873		TREETOP	81124.351	406807.203	42.7	N/A*	N/A*	14.7	28.0	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	TO BE REMOVED
876		TREETOP	81293.682	406986.335	40.0	N/A*	N/A*	19.2	20.8	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	TO BE REMOVED
877		TREETOP	81187.293	407109.684	52.2	N/A*	N/A*	22.2	30.0	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	TO BE REMOVED
878		TREETOP	81044.586	407084.124	54.5	N/A*	N/A*	21.6	32.9	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	TO BE REMOVED
879		TREETOP	81126.488	407144.338	48.3	N/A*	N/A*	23.1	25.2	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	TO BE REMOVED
880		TREETOP	81061.352	407135.667	39.5	N/A*	N/A*	22.9	16.6	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	TO BE REMOVED
889		TREETOP	82211.007	406496.054	37.0	N/A*	N/A*	7.0	30.0	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	TO BE REMOVED
890		TREETOP	81973.773	406485.261	32.7	N/A*	N/A*	6.7	26.0	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	TO BE REMOVED
894		TREETOP	82141.124	406542.621	31.9	N/A*	N/A*	8.1	23.8	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	TO BE REMOVED
895		TREETOP	81980.950	406659.535	33.0	N/A*	N/A*	11.0	22.0	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	TO BE REMOVED
900		TREETOP	82197.123	406865.773	36.4	N/A*	N/A*	16.2	20.2	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	TO BE REMOVED
901		TREETOP	82054.621	406857.777	25.5	N/A*	N/A*	16.0	9.5	N/A*	N/A*	N/A*	N/A*	OFF	YES	≤ 1 YEAR	TO BE REMOVED
905		TREETOP	82318.295	407095.216	33.2	N/A*	N/A*	22.0	11.2	N/A*	N/A*	N/A*	N/A*	ON	NO	≤ 1 YEAR	TO BE REMOVED

NOTE: ALL MANMADE OBJECTS SHOWN IN TABLE. TALLEST VEGETATIVE PENETRATION IN EACH GRID SHOWN IN TABLE.
*DIMENSIONAL STANDARDS APPLICABLE TO THRESHOLD SITING SURFACES BASED ON LATEST VERSION OF TABLE 3-2 AS DIRECTED IN FAA ENGINEERING BRIEF #99 AUTHORIZED 09.20.2019.
*N/A INDICATES OBSTRUCTION DOES NOT PENETRATE SURFACE INDICATED IN THE APPLICABLE COLUMN OF DATA TABLE.



LEGEND					
PART 77 APPROACH SURFACE		TREE OBSTRUCTION		AIRFIELD PAVEMENT	
THRESHOLD SITING SURFACE ROW 5		UTILITY OBSTRUCTION		GROUND PROFILE	
GLIDE PATH QUALIFICATION SURFACE (GQS)		BUILDING RESTRICTION LINE (BRL)		AIRFIELD PAVEMENT TO BE DEMOLISHED	
DEPARTURE SURFACE	— RVRZ —	RUNWAY OBSTACLE FREE ZONE (ROFZ)		EMAS BED	
PARCEL BOUNDARIES	— ROFA —	RUNWAY OBJECT FREE AREA (ROFA)		EXTENDED RUNWAY CENTERLINE	
RUNWAY PROTECTION ZONE (RPZ)	— RSA —	RUNWAY SAFETY AREA (RSA)		FUTURE AIRFIELD PAVEMENT	
AIRPORT PROPERTY LINE		1' GROUND CONTOURS		AREA OF VEGETATIVE PENETRATIONS	
AVIGATION EASEMENT		LAND ACQUISITION		CONSERVATION EASEMENT	



NOTES:

(1.) SEE AIRSPACE DRAWINGS FOR DETAILED OBSTRUCTIONS TO PRIMARY AND TRANSITIONAL SURFACES. SEE SHEET 8 FOR OBSTRUCTION DATA.

(2.) OBSTACLE ANALYSIS CONDUCTED BY MARTINEZ GEOSPATIAL BASED ON AERIAL MAPPING OBTAINED FROM SANBORN MAPPING COMPANY, APRIL 30, 2016.

(3.) ESTABLISHED AIRPORT ELEVATION = 3.36' MSL.

(4.) BASE MAP SOURCE: AERIAL IMAGERY OBTAINED FROM SANBORN MAPPING COMPANY, APRIL 30, 2016.

(5.) LOCAL ZONING ORDINANCE ESTABLISHED FOR PART 77 PROTECTED AIRSPACE SURFACES. SEE KEY WEST, FLORIDA CODE OF ORDINANCES SEC. 122-1438. AIRPORT ZONES AND AIRPORT HEIGHT LIMITATIONS.

(6.) GROUND PROFILE DRAWN FROM CONTOURS OBTAINED BY THE MONROE COUNTY FLORIDA GEOGRAPHIC INFORMATION SYSTEMS (GIS) DEPARTMENT.

(7.) RUNWAY END ELEVATIONS OBTAINED FROM AS BUILT SURVEY COMPLETED BY DOUGLASS, LEAVY & ASSOCIATES IN JUNE 2018.

(8.) PARCEL BOUNDARIES OBTAINED FROM MONROE COUNTY, FLORIDA DEPARTMENT OF PLANNING AND ENVIRONMENTAL RESOURCES, 2017.

(9.) THIS DRAWING SHOWS ACTUAL ROADWAY ELEVATIONS.

(10.) OBSTRUCTIONS IN TABLE REPRESENT TALLEST PENETRATION TO EACH SURFACE.

(11.) OBSTRUCTIONS SHOWN IN PROFILE VIEW ARE MOST DEMANDING IN GROUP.

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NO.	REVISIONS	DATE

INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 27

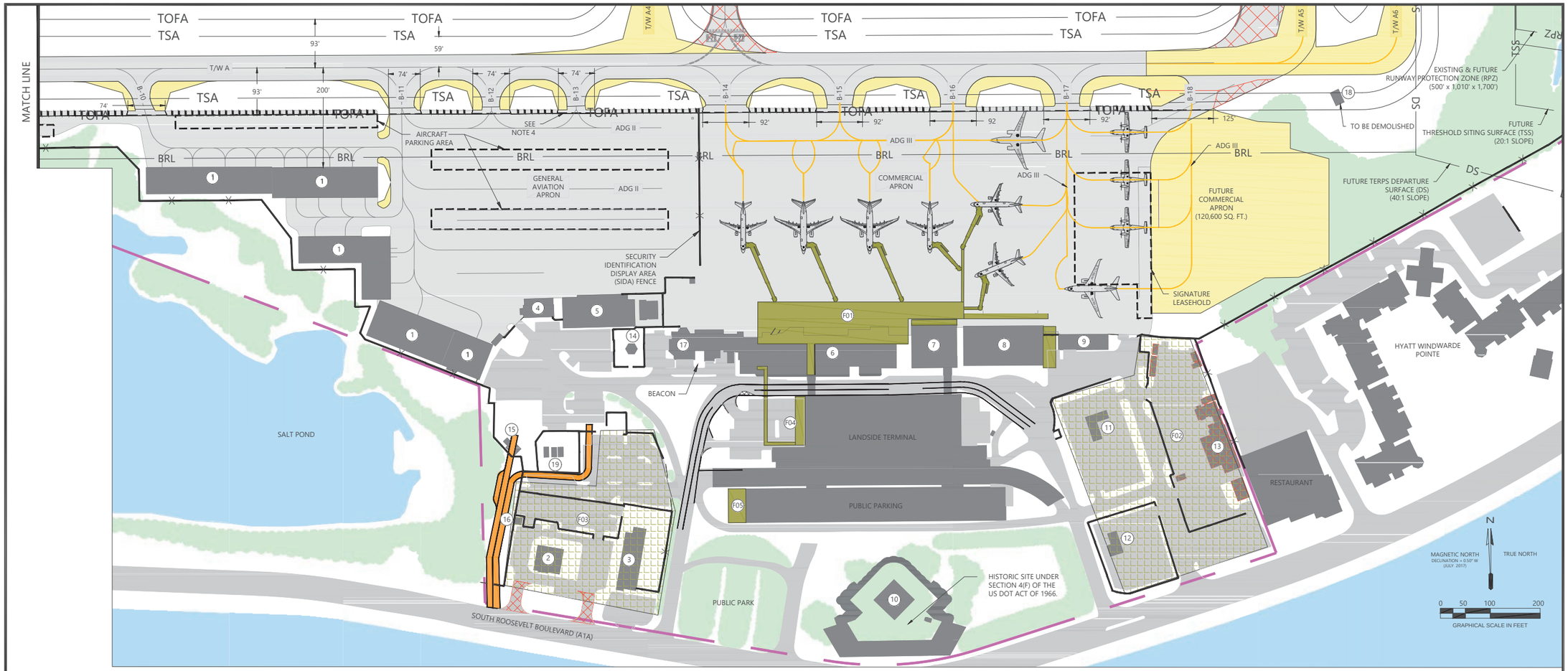
KEY WEST INTERNATIONAL AIRPORT
KEY WEST, FLORIDA

DRAWN BY: BCB
CHECKED BY: HHM

PREPARED BY:
JACOBS

DATE:
JANUARY 2020

Drawing: P:\2016\EBY16747 - EYW Master Plan\700CADD\Drawings\PlanProfile_RW27_UpdateHM.dwg, Layout: Layout2, Aug 13, 2019, 10:25am



EXISTING BUILDING INDEX

NO.	DESCRIPTION	ELEV.*
1	AIRCRAFT STORAGE HANGARS	24'
2	DEPARTMENT OF MOTOR VEHICLES	29'
3	VACANT	29'
4	FBO OFFICE	15'
5	FBO MAINTENANCE HANGAR	34'
6	AIRPORT PASSENGER TERMINAL	55'**
7	TERMINAL ANNEX	16'
8	U.S. CUSTOMS AND BORDER PROTECTION	35'
9	FEDERAL EXPRESS CARGO TERMINAL	20'
10	FORT EAST MARTELLO GALLERY AND MUSEUM (HISTORIC SITE)	40'
11	AVIS RENTAL CAR	16'
12	DOLLAR RENTAL CAR	16'
13	DEPARTMENT OF PUBLIC WORKS (TO BE DEMOLISHED)	20'
14	AIR TRAFFIC CONTROL TOWER - TOP ELEVATION INCLUDING ANTENNA: - CAB ROOF ELEVATION: - CAB EYE LEVEL ELEVATION: - CAB FLOOR ELEVATION:	68' 59' 49' 44'
15	MAINTENANCE/STORAGE BUILDING	7'
16	STORAGE BUILDING	15'
17	ARFF STATION	39'
18	FORMER NWS BALLOON LAUNCH FACILITY (AIRPORT STORAGE) (TO BE DEMOLISHED)	37'
19	AVIATION FUEL FARM	19'

* - APPROXIMATE TOP ELEVATION (MSL)
** - ELEVATION TO TOP OF ANTENNA (MSL)

FUTURE BUILDING INDEX

NO.	DESCRIPTION	ELEV.*
F01	AIRSIDE PASSENGER TERMINAL	TBD
F02	RENTAL CAR / PUBLIC PARKING FACILITY	TBD
F03	RENTAL CAR / PUBLIC PARKING FACILITY	TBD
F04	LANDSIDE TERMINAL EXPANSION	TBD
F05	CONSOLIDATED MAINTENANCE STORAGE FACILITY	TBD

* - APPROXIMATE TOP ELEVATION (MSL)

NOTES

1. REFER TO SHEET 4 FOR ADDITIONAL INFORMATION.
2. REFER TO SHEET 5 FOR ULTIMATE CONDITIONS.
3. THE BUILDING RESTRICTION LINE (BRL) DEPICTED PROVIDES 35 FEET OF VERTICAL CLEARANCE UNDER APPLICABLE 14 CFR PART 77 SURFACES. THE BRL ENCOMPASSES THE RUNWAY PROTECTION ZONES (RPZ), TAXIWAY OBJECT FREE AREAS (TOFA), AND NAVAID CRITICAL AREAS AS APPLICABLE.
4. HOLDING POSITION MARKINGS TO BE RELOCATED IN ACCORDANCE WITH ENGINEERING BRIEF NO. 78, *LINEAR EQUATIONS FOR EVALUATING THE SEPARATION OF AIRPLANE DESIGN GROUPS ON PARALLEL TAXIWAYS AND TAXIWAYS TO FIXED/MOVABLE OBJECTS.*

LEGEND

	EXISTING	FUTURE
14 CFR PART 77 APPROACH SURFACE (AS)	AS	AS(F)
THRESHOLD SITING SURFACE (TSS)	TSS	SAME
TAXIWAY SAFETY AREA (TSA)	TSA	SAME
TAXIWAY OBJECT FREE AREA (TOFA)	TOFA	SAME
BUILDING RESTRICTION LINE (BRL)	BRL	SAME
PROPERTY LINE		SAME
AOA/SIDA FENCE		
ROADWAYS		
AOA FENCE TO BE RELOCATED	N/A	
AIRFIELD PAVEMENT/AIRPORT SERVICE ROAD		
TO BE DEMOLISHED	N/A	
STRUCTURE		
NO-TAXI ISLAND	N/A	
WATER		SAME
VEGETATION		SAME
NAVIGATIONAL AIDS		
PUBLIC PARKING/RENTAL CAR FACILITY	N/A	

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NO.	REVISIONS	DATE

TERMINAL AREA PLAN

KEY WEST INTERNATIONAL AIRPORT
KEY WEST, FLORIDA

DRAWN BY: JA
CHECKED BY: SC

PREPARED BY:
RICONDO & ASSOCIATES, INC.

DATE:
JANUARY 2020

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\211- ALP\CAD\EYW_ALP2017_SHEET11_TERMINAL AREA.dwg_Layout: Sheet 8- Terminal Area_Jan 03, 2020, 1:06pm



SOURCE: KB ENVIRONMENTAL SCIENCES, INC.; AEDT 2D SP2; ESRI; DIGITALGLOBE; GEOEYE; EARTHSTAR GEOGRAPHICS; CNES/AIRBUS DS; USDA; USGS; AEX; GETMAPPING; AEROGRID; IGN; IGP; SWISSTOPO; GIS USER COMMUNITY; SEPTEMBER 2017; GOOGLE EARTH, APRIL 2018 (AERIAL PHOTOGRAPHY).

N

MAGNETIC NORTH DECLINATION = 0.50° W (JULY, 2017)

TRUE NORTH

0 250 500 1000

GRAPHICAL SCALE IN FEET

LEGEND

FEATURE

- AIRPORT OPERATION AREA
- AVIATION
- ENVIRONMENTAL
- COMMUNITY/GOVERNMENT
- VACANT
- RESIDENTIAL
- TRANSIENT RESIDENTIAL
- COMMERCIAL

FEATURE

- 65DNL 70DNL 75DNL NOISE CONTOUR (DECIBEL NOISE LEVEL)
- RSA RUNWAY SAFETY AREA
- ROFA RUNWAY OBJECT FREE AREA
- RPZ RUNWAY PROTECTION ZONE
- OFZ OBSTACLE FREE ZONE
- BRL BUILDING RESTRICTION LINE
- PROPERTY LINE
- PAVEMENT TO BE REMOVED
- AVIGATION EASMENT
- AIRPORT REFERENCE POINT

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PHONE (407) 381-5730

NO.	REVISIONS	DATE

AIRPORT LAND USE PLAN

KEY WEST INTERNATIONAL AIRPORT
KEY WEST, FLORIDA

DRAWN BY: JA

CHECKED BY: SC

PREPARED BY:
RICONDO & ASSOCIATES, INC.

DATE:
JANUARY 2020

SHEET 12 OF 13

Drawing: P:\Project-Orlando\Monroe County\Task 200 - EYW Master Plan\211- ALP\CAD\EYW_ALP2017_SHEET12-LAND USE.dwg_Layout: Land Use Plan_Jan 03, 2020, 1:02pm



PROPERTY ACQUISITION LEGEND:

PARCEL NUMBER	ACRES	ACQUISITION TYPE	DATE ACQUIRED	METHOD ACQUIRED
1	159.68	FEE SIMPLE	1952	SURPLUS PROPERTY
2	2.51	FEE SIMPLE	1952	SURPLUS PROPERTY
3	5.55	FEE SIMPLE	1980	VIA WILL
4	46.08	FEE SIMPLE	2013	FIRST CITIZENS BANK
5	14.75	FEE SIMPLE	1952	SURPLUS PROPERTY
6A	26.48	FEE SIMPLE	2000	SURPLUS PROPERTY
6B	42.78	FEE SIMPLE	1974	SURPLUS PROPERTY
7	10.60	FEE SIMPLE	2013	FIRST CITIZENS BANK

NOTE: PARCEL NO. 4 IS NOT CONTIGUOUS WITH OTHER PARCELS

LINE DATA:

	(DEED)	(NAD 83 / 2011)	
L1:	S 23°06'58" E	S 23°10'11" E	13.06'
L2:	S 60°00'17" E	S 60°03'30" E	288.91'
L3:	S 80°39'21" E	S 80°42'34" E	56.37'
L4:	N 81°53'40" E	N 81°50'27" E	236.06'
L5:	N 84°05'45" E	N 84°02'32" E	122.92'
L6:	N 73°28'38" E	N 73°25'25" E	124.00'
L7:	S 88°58'38" E	S 89°00'43" E	204.30'
L8:	N 89°33'33" E	N 89°31'28" E	224.03'
L9:	N 89°23'23" E	N 89°21'18" E	111.18'

CURVE DATA:

				(DEED)	(NAD 83 / 2011)	
C1:	R=425.00'	L=153.18'	Δ=20°39'05"	CB=S 70°19'49" E	CB=S 70°23'03" E	CH=152.36'
C2:	R=1025.00'	L=312.17'	Δ=17°26'59"	CB=S 89°22'51" E	CB=S 89°26'04" E	CH=310.96'
C3:	R=225.00'	L=41.70'	Δ=10°37'07"	CB=N 78°47'12" E	CB=N 78°43'58" E	CH=41.64'
C4:	R=475.00'	L=145.46'	Δ=17°32'43"	CB=N 82°15'00" E	CB=N 82°12'56" E	CH=144.89'

LAND DESCRIPTION:

A parcel of land located in Sections 3 and 4, Township 68 South, Range 25 East, on the Island of Key West, Monroe County, Florida and being more particularly described as follows:

BEGIN at the Northwest corner of the United States Government East Martello Tower Military reservation as shown on a map recorded in Plat Book 1 at Page 31 of the Public Records of Monroe County Florida and said point also being the Southwest corner of Lot 11, Block 2, "RESUBDIVISION OF BLOCK 2, KEY ESTATES", according to the Plat thereof, as recorded in Plat Book 3, at Page 101 of the Public Records of Monroe County, Florida; thence N 77°35'02" E, along the Southerly line of said "RESUBDIVISION of BLOCK 2, KEY ESTATES", a distance of 787.79 feet to a 50 foot wide Access Easement; thence along the said Easement for the following thirteen (13) metes and bounds; thence S 23°06'58" E, a distance of 13.06 feet; thence S 60°00'17" E, a distance of 288.91 feet to the point of curvature of a curve to the left, having: a radius of 425.00 feet, a central angle of 20°39'05", a chord bearing of S 70°19'49" E and a chord length of 152.36 feet; thence along the arc of said curve, an arc length of 153.18 feet to the point of tangency of said curve; thence S 80°39'21" E, a distance of 56.37 feet to the point of curvature of a curve to the left, having: a radius of 1025.00 feet, a central angle of 17°26'59", a chord bearing of S 89°22'51" E and a chord length of 310.96 feet; thence along the arc of said curve, an arc length of 312.17 feet to the point of tangency of said curve; thence N 81°53'40" E a distance of 236.06 feet; thence N 84°05'45" E, a distance of 122.92 feet to the point of curvature of a curve to the left, having: a radius of 225.00 feet, a central angle of 10°37'07", a chord bearing of N 78°47'12" E and a chord length of 41.64 feet, thence along the arc of said curve, an arc length of 41.70 feet to the point of tangency of said curve; thence N 73°28'38" E, a distance of 124.00 feet to the point of curvature of a curve to the right, having: a radius of 475.00 feet, a central angle of 17°32'43", a chord bearing of N 82°15'00" E and a chord length of 144.89 feet; thence along the arc of said curve, an arc length of 145.46 feet to the point of tangency of said curve; thence S 88°58'38" E, a distance of 204.30 feet; thence N 89°33'33" E, a distance of 224.03 feet; thence N 89°23'23" E, a distance of 111.18 feet; thence N 01°46'34" W, a distance of 189.89 feet to the Southerly boundary of "RIVIERA SHORES SUBDIVISION, 1st ADDITION", as recorded in Plat Book 5, at Page 88, of the Public Records of Monroe County, Florida; thence S 86°31'54" E, and along the said Southerly boundary line of said "RIVIERA SHORES SUBDIVISION, 1st ADDITION", a distance of 1216.41 feet; thence N 19°06'34" W, a distance of 54.15 feet to the Southerly Line of Parcel No. 42, "PLAT OF SURVEY, PART OF LANDS FORMERLY OWNED BY KEY WEST IMPROVEMENT, INC.", as recorded in Plat Book 1, at Page 69, of the Public Records of Monroe County, Florida; thence S 86°31'54" E, along the Southerly Boundary line of said Parcel 42, and along the Southerly Boundary line of Parcels 38, 39, 40, and 41 (Parcels 40 & 41, are per plat, "PLAT OF SURVEY OF LANDS ON ISLAND OF KEY WEST, MONROE COUNTY, FLORIDA", as recorded in Plat Book 3, at Page 35, of the Public Records of Monroe County, Florida), Parcels 38, 39, and 40 are per Plat Book 1, Page 69, a distance of 4437.12 feet; thence S 56°49'28" E, a distance of 40.44 feet, thence N 89°41'41" E, and along the line lying 250 feet Northerly of and Parallel with the Centerline of Runway 9-27, Key West Airport a distance of 657.02 feet to the Westerly Right-of-Way Line of South Roosevelt Boulevard (A1A); thence meander the said Westerly Right-of-Way Line of South Roosevelt Boulevard for the following two (2) metes and bounds; thence S 08°03'39" E, a distance of 265.44 feet to the point of curvature of a curve to the right, having: a radius of 385.26 feet, a central angle of 36°27'10", a chord bearing of S 10°09'56" W and a chord length of 241.00 feet; thence along the arc of said curve, an arc length of 245.11 feet to the end of said curve; thence S 89°41'41" W., and along a line 250 feet Southerly of and parallel with the centerline of Runway 9-27, Key West Airport, a distance of 726.34 feet; thence S 00°38'33" E, a distance of 154.04 feet; thence S 54°49'48" W, a distance of 150.00 feet; thence S 61°10'49" W, a distance of 812.84 feet; thence S 20°56'47" E, a distance of 448.89 feet to the Northerly Right-of-Way Line of said South Roosevelt Boulevard and a point on a curve concave to the Northwest; thence meander the said Northerly Right-of-Way Line of South Roosevelt Boulevard for the following three (3) metes and bounds; thence along the said curve, concave to the Northwest and to the Left, having for its elements a radius of 2839.93 feet and a central angle of 01°37'12", a chord bearing of S 71°17'20" W and a chord distance of 88.55 feet for an arc length of 88.55 feet to a point of tangency; thence S 72°10'56" W, a distance of 539.52 feet to a point on a curve to the right, having a radius of 649.68 feet, a central angle of 27°22'59", a chord bearing of S 85°52'25" W, and a chord length of 307.55 feet; thence along the arc of said curve, an arc length of 310.50 feet to the point of tangency of said curve; thence N 80°26'05" W, a distance of 692.83 feet; thence N 01°34'25" W, and leaving the said Northerly Right-of-Way Line of South Roosevelt Boulevard a distance of 436.09 feet; thence N 89°09'25" W, a distance of 945.97 feet; thence S 82°45'35" W along the Northerly Boundary Line of Parcels 47 & 48, as recorded in Plat Book 3, Page 35 and Plat Book 1, Page 69 respectively, of the Public Records of Monroe County, a distance of 2431.62 feet; thence N 01°39'54" W, a distance of 406.11 feet; thence S 77°59'08" W, along the Northerly Boundary Line of Parcels 44, 45 and 46 per Plats, as recorded in Plat Book 1, Page 69 and Plat Book 3, at Page 35, of the Public Records of Monroe County, a distance of 2523.94 feet; thence N 12°00'54" W, a distance of 1400.00 feet to the **POINT OF BEGINNING.**

Said lands lying and situate in Key West, Monroe County, Florida, containing 11,083,953 square feet (254.452 acres), more or less.

Boundary Survey Prepared by Avirom and Associates Inc.
06/23/2016

SURVEYOR'S REPORT:

1. Reproductions of this Sketch are not valid without the signature and the original raised seal of a Florida licensed surveyor and mapper.
2. No Title Opinion or Abstract to the subject property has been provided. It is possible that there are Deeds, Easements, or other instruments (recorded or unrecorded) which may affect the subject property. No search of the Public Records has been made by the Surveyor.
3. The land description shown hereon was provided by the Client.
4. No improvements were located.
5. Bearings shown hereon are based on the westerly right-of-way line South Roosevelt Boulevard having a bearing of S 08°03'39" E.
6. The Grid coordinates shown hereon are based on the North American Datum of 1983, adjustment of 2011 (NAD 83/2011) Epoch 2010.00, of the Florida State Plane Coordinate System (Transverse Mercator Projection), East Zone established by a Real-time Network (RTN) GPS Control Survey which is certified to a 2 centimeter local accuracy, relative to the nearest control point within the National Geodetic Survey's (NGS) Geodetic Control Network.
   a. Method: Wide Area Continuously Operating GPS Reference Station Network
   b. Equipment Used: Trimble R10 GNSS, Serial Number 5413460373 (Dual Frequency Receiver)
   c. Processing Software: Trimble Business Center, Version 3.51

   The following NGS horizontal stations were utilized:

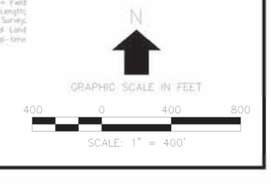
   EYW ARP 2 (PID AA0043)

Latitude (North)	Longitude (West)	Northing (US Feet)	Easting (US Feet)	Elevation (US Feet)	Remarks
24°33'23.53010"	081°45'34.42350"	81,802.70	403,713.94	0.89	Published
24°33'23.53002"	81°45'34.42314"	81802.69	403713.97	0.71	Observed

   EYW ARP 2 (PID AA0043)

Latitude (North)	Longitude (West)	Northing (US Feet)	Easting (US Feet)	Elevation (US Feet)	Remarks
24°33'23.28023"	081°46'00.39025"	81,790.75	401,316.35	1.21	Published
24°33'23.28034"	81°46'00.39016"	81790.76	401316.36	1.15	Observed

7. This map is intended to be displayed at a scale of 1:3600 (1"=300').
8. Units of measurement are in U.S. Survey Feet and decimal parts thereof. Well identified features in this survey were field measured to a horizontal positional accuracy of 0.10'. The intended use of the of this Survey is to graphically depict the boundary and calculate the area of the property described hereon.
9. Abbreviation Legend: Δ = Central Angle, CB = Chord Bearing; CH = Chord Length; C.M. = Concrete Monument; D = Per Deed; F.B. = Field Book; FD. = Found; F.D.O.T. = Florida Department of Transportation; ID. = Identification; I.P. = Iron Pipe; I.R. = Iron Rod; L = Arc Length; L.B. = Licensed Business; M.C.R. = Monroe County Records; Ms = Measured; NAD = North American Datum; NGS = National Geodetic Survey; O.R.B. = Official Records Book; O/S = Offset; P.B. = Plat Book; PG(S) = Page(s); PID = Point Identifier; P.L.S. = Professional Land Surveyor; P.O.B. = Point of Beginning; P.R.M. = Permanent Reference Monument; R = Radius; R/W = Right-of-Way; RTN = Real-time Network; W/CAP = With Surveyors Cap.



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ORLANDO, FL 32801
PHONE (407) 361-5730
FAX (407) 872-3303

NO.	REVISIONS	DATE

EXHIBIT 'A' DRAWING

KEY WEST INTERNATIONAL AIRPORT

KEY WEST, FLORIDA

DRAWN BY: HHM
CHECKED BY: HHM

PREPARED BY
JACOBS

DATE:
JANUARY 2020

SHEET 13 of 13

Drawing: F:_MONROE COUNTY_Projects\EYW Exhibits\Property Line\EYW-Exhibit A_Final.dwg, Layout: Layout1, Aug 14, 2019, 9:41am

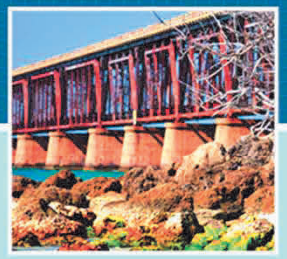
Appendix G

Technical Review Committee Materials



Key West International Airport

Master Plan Update



JACOBS

RICONDO & ASSOCIATES

Technical Review Committee Meeting #1
June 16, 2016

Draft – For Discussion Purposes Only

Overview

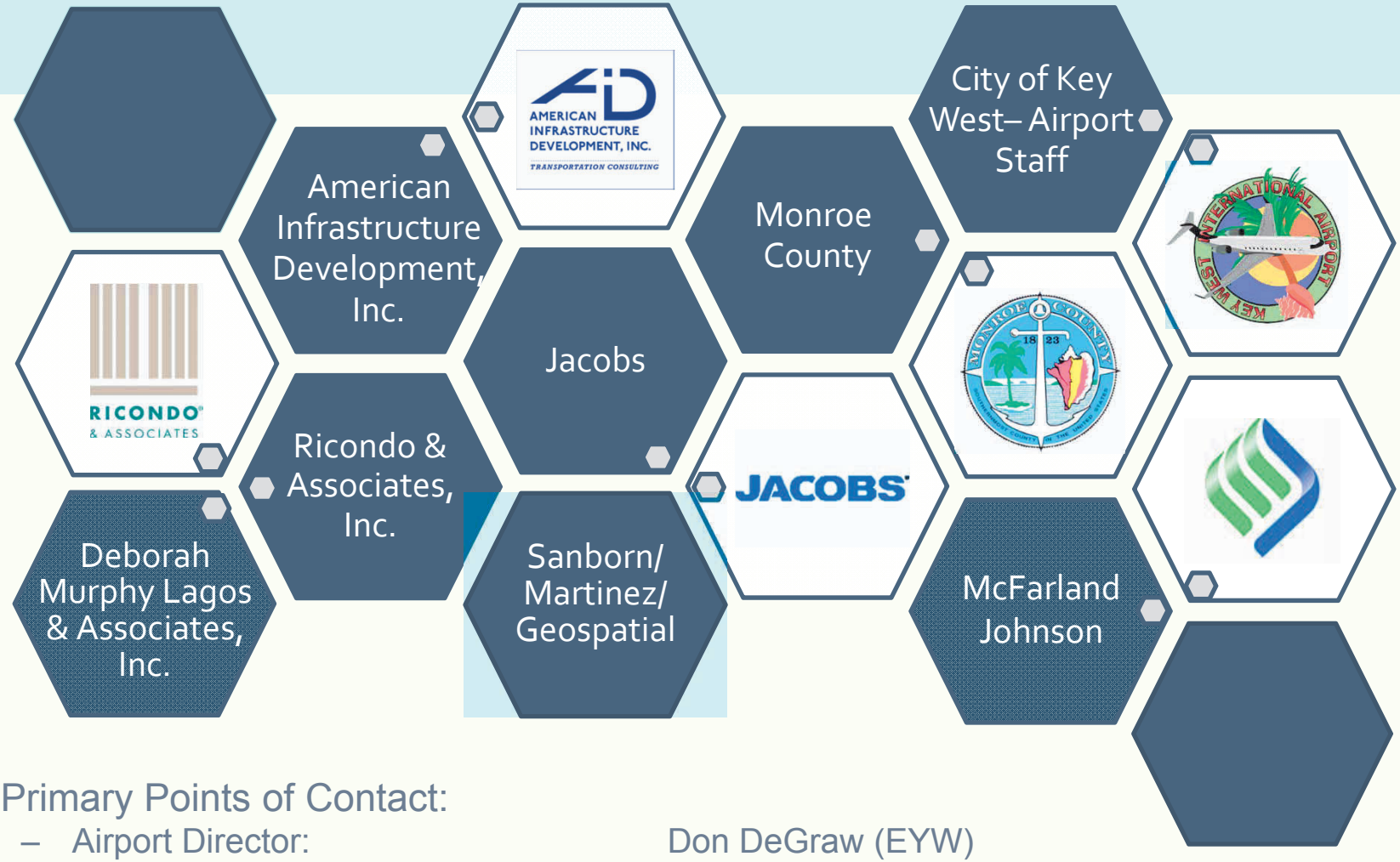
- Introductions
- Presentation of the Study
- The Technical Review Committee (TRC)
- Aviation Activity Forecasts
- Open Discussion/Next Steps

INTRODUCTIONS

Introductions

- Your name
- Which organization you represent
- What does your organization do ?
- Tell us how the Airport is important to your organization

Project Team



- Primary Points of Contact:
  - Airport Director: Don DeGraw (EYW)
  - Program Manager: Jacobs - Chris Bowker / Ryan Forney
  - Project Manager/Technical Lead: R&A - Shane Ingolia/Sebastien Carreau

PRESENTATION OF THE STUDY

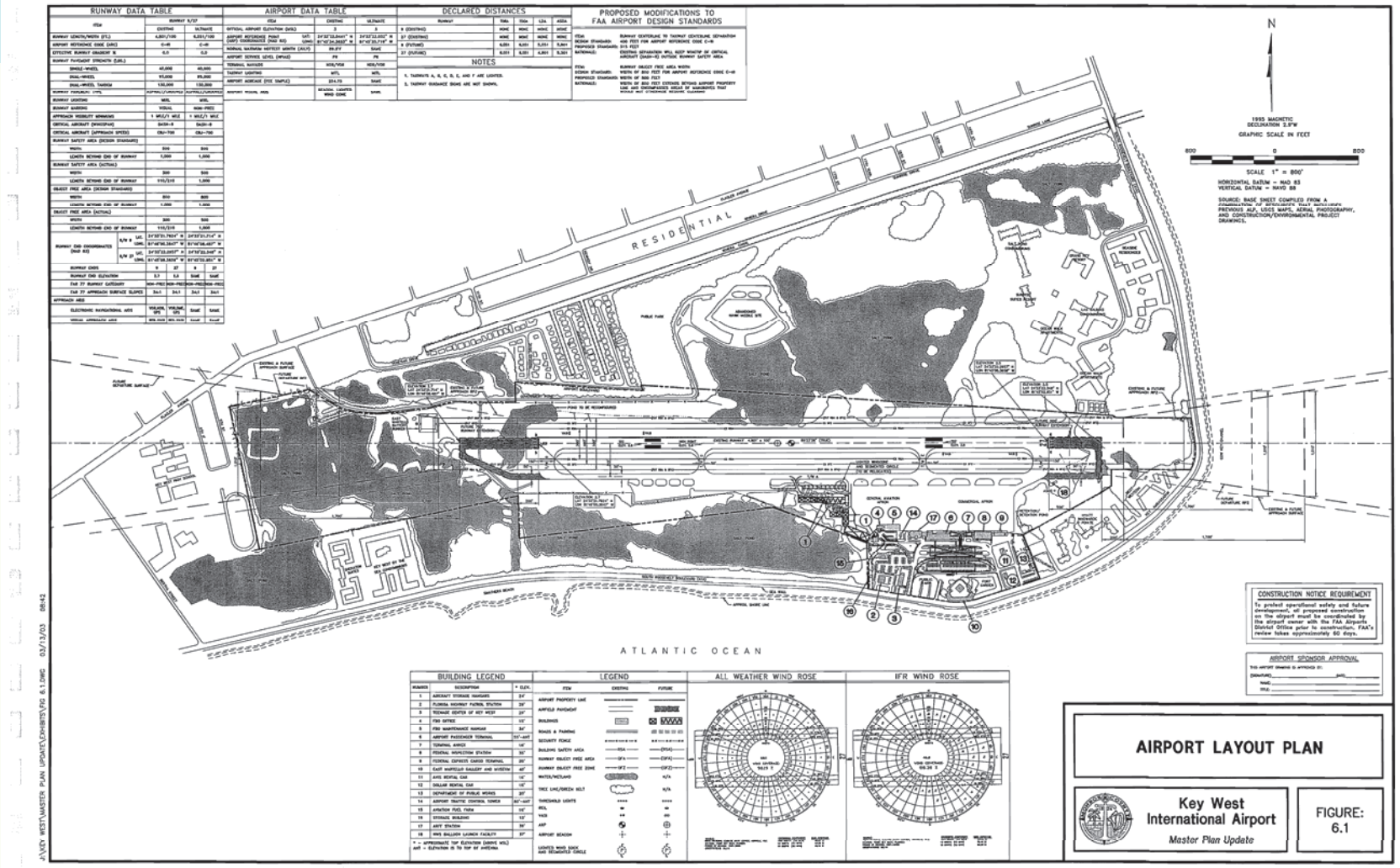
Airport Master Plan

"An airport master plan is a comprehensive study of an airport and usually describes the short-, medium-, and long-term development plans to meet future aviation demand."

FAA Advisory Circular 150/5070 – 6B – Airport Master Plans

- Decision-making tool to guide orderly development of airport facilities
- FAA recommends updating an airport master plan every 5 to 10 years.
- Specific elements of the Master Plan require approval from the Federal Aviation Administration (FAA)
  - Forecast (including passengers, operations, and design aircraft)
  - Airport Layout Plan (ALP) needs approval in order for the airport to obtain federal funding for capital projects

2003 Airport Layout Plan



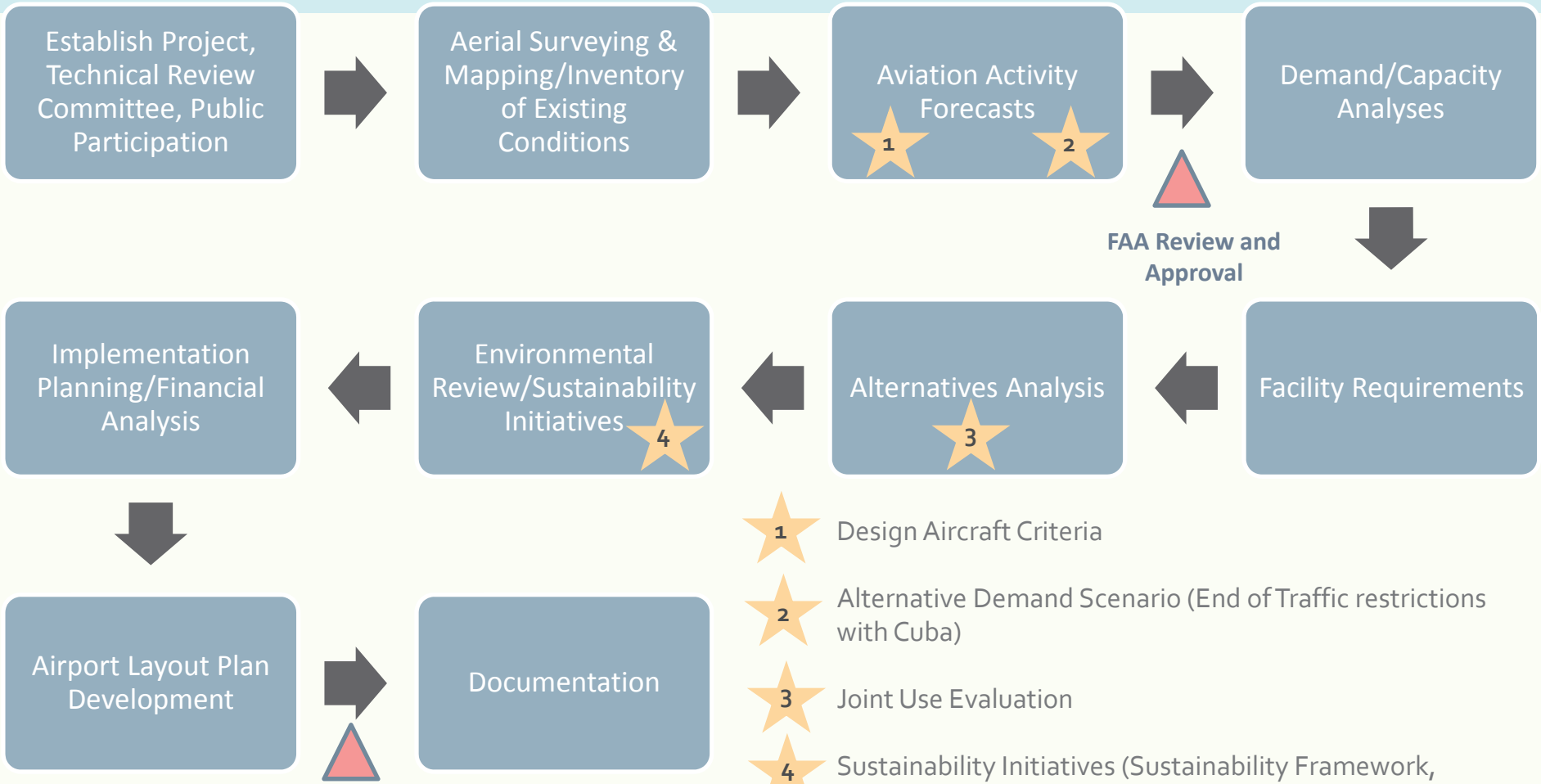
Project Background

- EYW Master Plan was last submitted to the FAA in 2003.
  - New Facilities (Passenger Terminal, Parking Garage, EMAS)
  - Traffic Levels
  - Property Acquisition
- Part 150 Noise study completed in 2013
- Major changes since the FAA-approval of the ALP:
  - AC 150/5300-13A Change 1, Airport Design
  - SOPs 2.00 and 3.00
  - AC 150/5300-16A, 17C and 18C
  - Draft AC on Critical Aircraft & Regular Use Determination

Key Goals and Objectives

1. Identify the Critical Aircraft
2. Assess Ways to Maximize the Existing Aircraft Ramp Layout
3. Reevaluate the Capacity of the Existing Passenger Terminal
4. Analyze the Congestion of the Bag Claim Area
5. Evaluate the Existing Airport Access Road and Curbside Capacity to Relieve Congestion
6. Explore the Need for Additional Aircraft Hangar Facilities
7. Identify Best Use for Non-Aeronautical Land Use Areas
8. Develop an Exhibit 'A' Airport Property Map
9. Reassess Conclusions and Recommendations from the 1990 Joint Use Evaluation Study
10. Examine Potential Traffic and Passenger Demand Resulting from Restored Relations with Cuba

Airport Master Plan Process



Airport Master Plan Deliverables

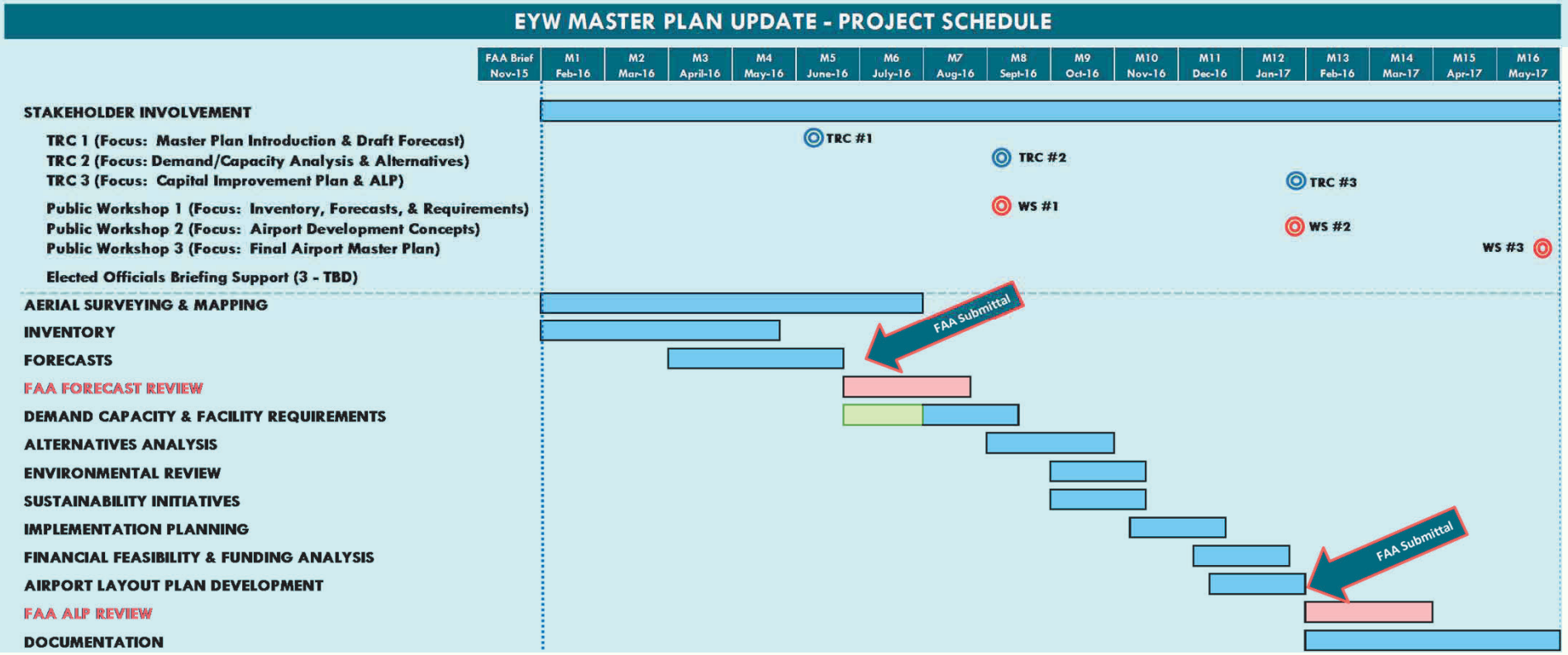
		Responsibility					
Master Plan Chapters	Stand Alone Deliverables	JACOBS	R&A	AID	MFJ	DML	Sanborn
Inventory of Existing Conditions		●		●	○		
Aerial Surveying & Mapping							●
Aviation Activity Forecasts	Activity Forecast (Subject to FAA approval)		●		○		
Demand/Capacity Analysis & Facility Requirements			●	○	○		
Alternatives Analysis		○	●		○		
Environmental Overview			●			○	
Sustainability Initiatives			●				
Financial Feasibility & Implementation Plan	Capital Improvement Program (CIP)	○	●				
Airport Layout Plan (ALP) Update	Draft and Final ALP (Subject to FAA approval)	○	●				
Final Documentation	Airport Master Plan Technical Report & Executive Summary		●				

Legend:

● Primary Responsibility

○ Support Role

Project Schedule



THE TECHNICAL REVIEW COMMITTEE

Technical Review Committee Role

- Advisory in nature. Will provide consensus opinion for Airport staff to consider when making planning decisions.
- Provide feedback and technical guidance on each element of the Master Plan Update:
  - Bring various master local perspectives to the master planning process
  - Reach consensus on key master plan issues

Technical Review Committee Responsibilities

- Attend three meetings over the course of the 16-month study
- Provide input and guidance on technical analyses
- Review and comment on technical work products
- Provide ideas for consideration in the Master Plan
- Stay engaged in the planning process
- Help build the Airport's future by sharing what you learn from Committee participation

Anticipated Meetings

- Meeting #1: Master Plan Introduction & Draft Aviation Activity Forecast
- Meeting #2: Demand/Capacity Analysis and Development Alternatives
- Meeting #3: Recommendation for Preferred Alternative and Capital Improvement Plan

FORECAST OF AVIATION ACTIVITY

Presentation Outline

- Section 1: Presentation Objectives and Forecasting Process
- Section 2: Baseline Enplaned Passenger Forecast
- Section 3: General Aviation Activity Forecasts
- Section 4: Baseline Aircraft Operations Forecast
- Section 5: Alternate Demand Scenarios Forecasts



Section One

PRESENTATION OBJECTIVES AND FORECASTING PROCESS

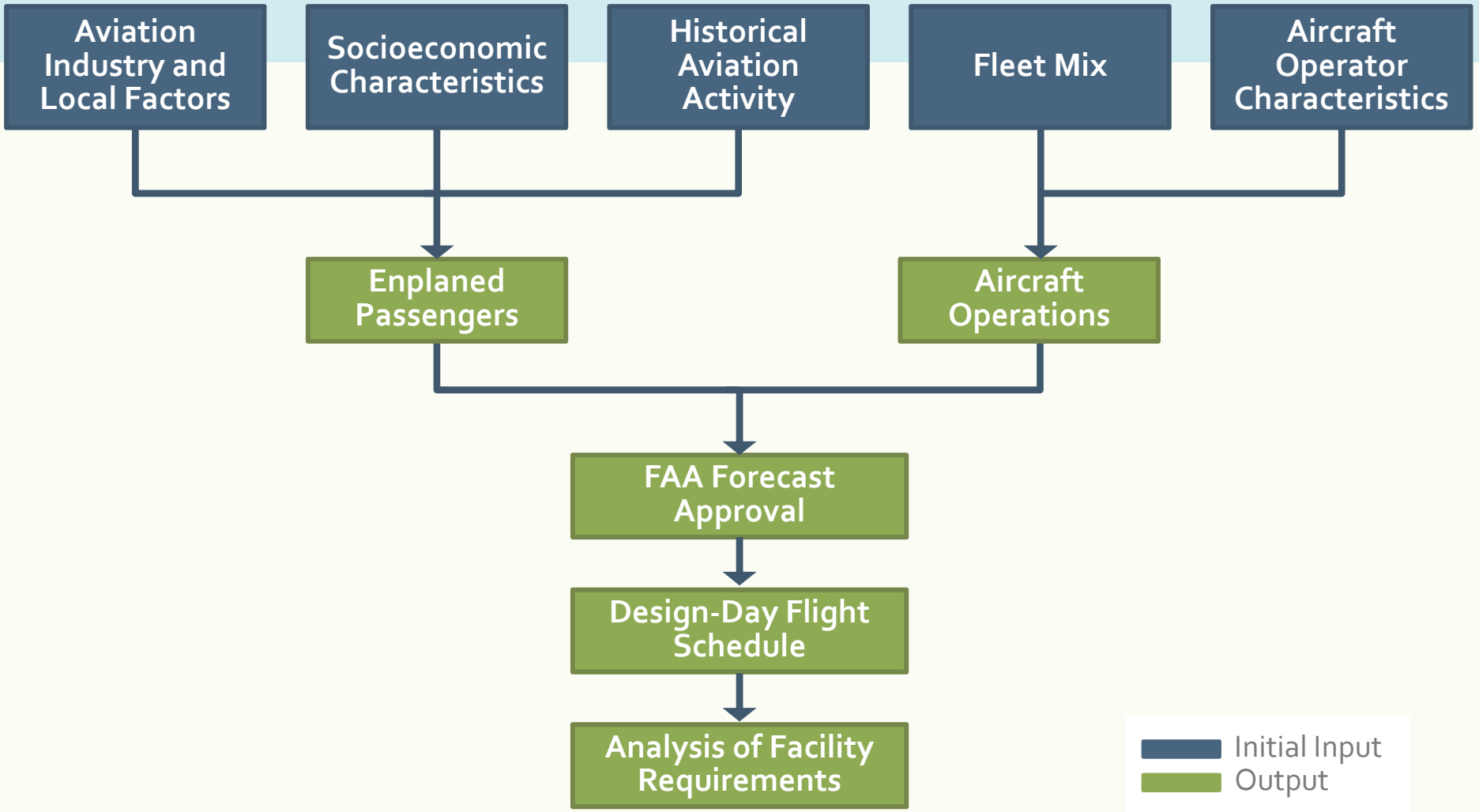


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Preface

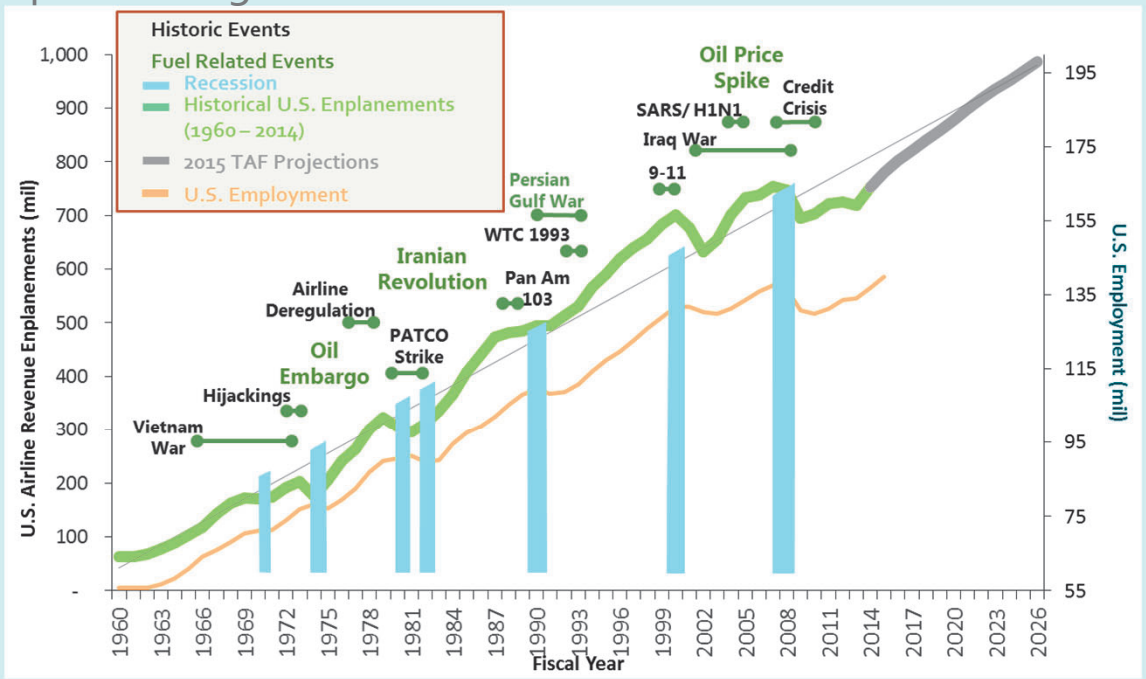
- Traditionally, passenger forecasts are based on relationships between passenger volumes of socioeconomic variables
- When there are no discernible relationships between socioeconomic variables and passengers, relationships with other indicators of demand must be explored
  - Over the last decade, the relationship between socioeconomic variables and passenger volumes has broken down at many airports due largely to capacity discipline: airlines are limiting capacity and deriving higher revenues from increased fares
- The relationship between socioeconomic variables and passenger revenue is strong at EYW
  - We first forecast revenue at EYW and then model how airlines will capture that revenue through a combination of higher fares and higher passenger volumes to forecast the enplaned passengers

The Master Plan Forecasting Process



National Trends

- Industry consolidation and restructuring have accelerated since 2008.
- Passenger demand has increased relative to seat capacity, resulting in higher load factors.
- Airline revenues have risen above pre-recession levels.
- Airlines have shifted focus from passenger growth to revenue growth.
- Overall, passenger demand is expected to grow nationwide.

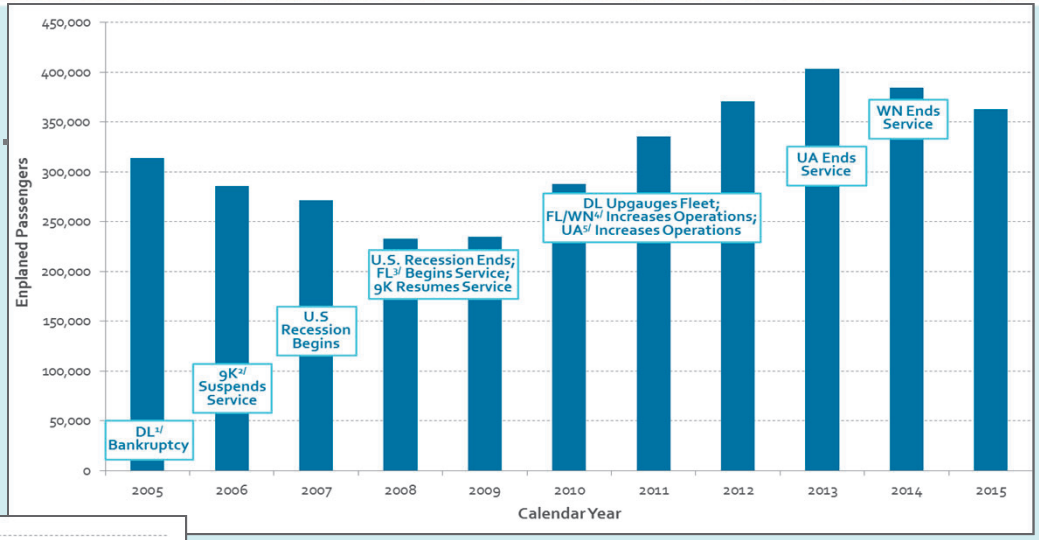


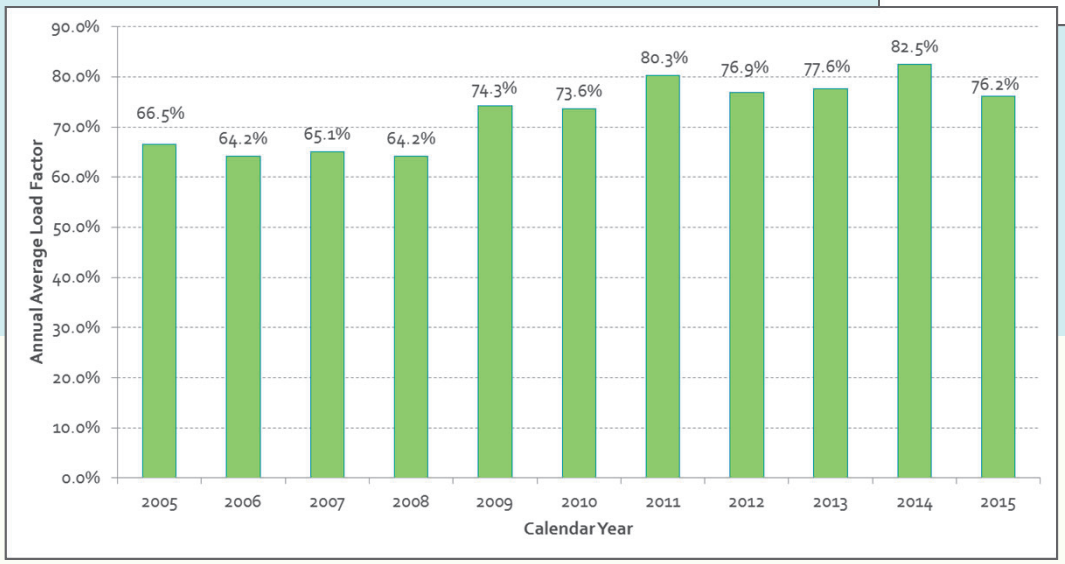
Sources: U.S. Bureau of Labor Statistics, March 2016; FAA 2015 TAF, March 2016.

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Local Trends and Observations

- Carriers' entries and exits have affected passenger enplanements.
- Average load factors have remained high through the last 7 years but varies with carriers serving the Airport.





Sources: U.S. DOT T-100, March 2016; Innovata, March 2016.

Notes: 1/ Delta Air Lines; 2/ Cape Air; 3/ AirTran Airways; 4/ Southwest Airlines; 5/ United Airlines.

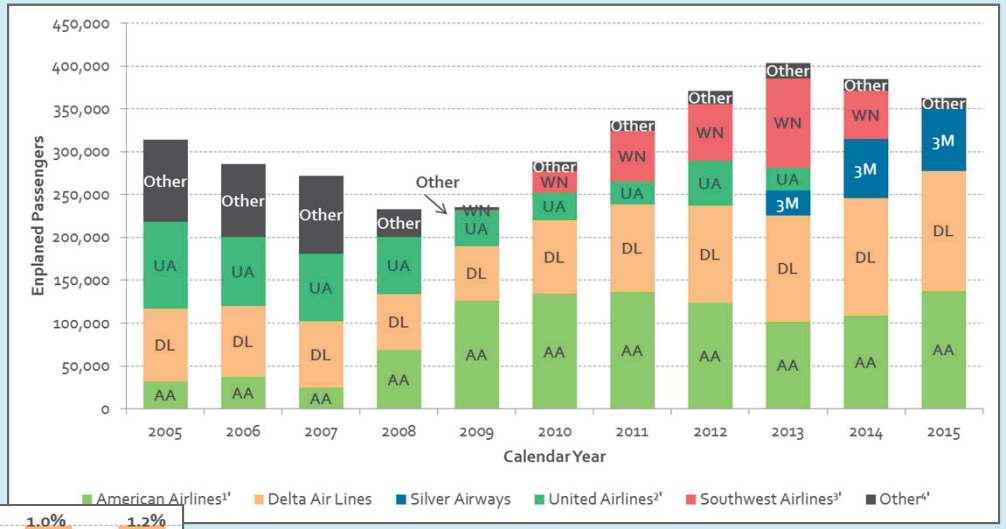
Historical Scheduled Passenger Air Carrier Base											
AIR CARRIER[1/]	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Chalk's International Airlines			●								
American Airlines[2/]	●	●	●	●	●	●	●	●	●	●	●
Cape Air	●	●			●	●	●	●	●		
Delta Air Lines	●	●	●	●	●	●	●	●	●	●	●
Florida Coastal Airlines	●	●									
Silver Airways Corporation									●	●	●
Southwest Airlines[3/]					●	●	●	●	●	●	
United Airlines[4/]	●	●	●	●	●	●	●	●	●		
Yellow Air Taxi			●	●	●						

Notes: 1/ Includes regional affiliated airlines, as applicable; 2/ Includes US Airways; 3/ Includes AirTran Airways; 4/ Includes Continental Airlines.

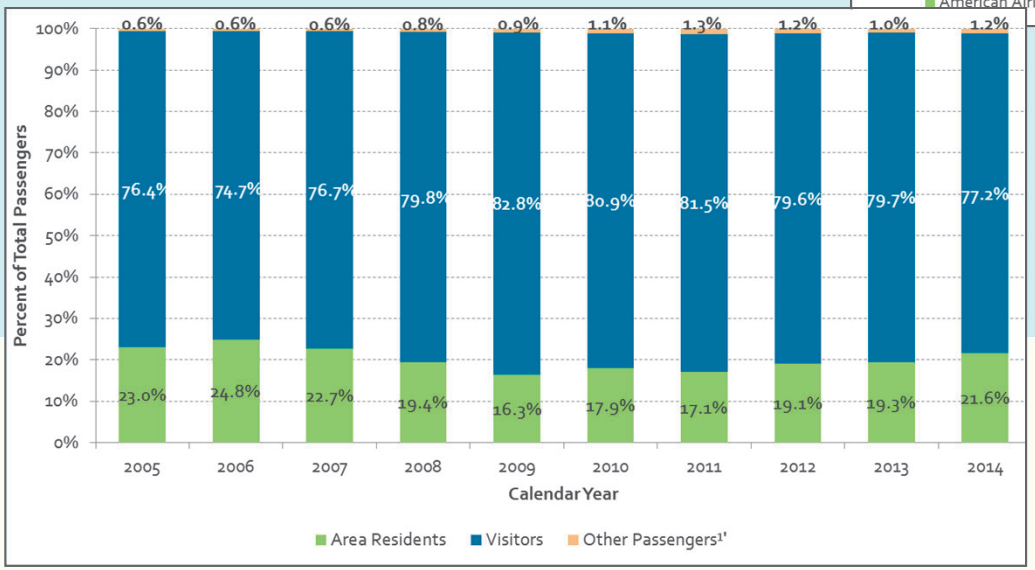
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Local Trends and Observations

- The market is shared between a few carriers at the Airport.
- EYW is a destination-heavy airport.
- March is most often the peak month.



Notes: Includes regional affiliates; 1/ Includes US Airways; 2/ Includes Continental Airlines; 3/ Includes AirTran Airways; 4/ Includes non-scheduled passenger airlines and other scheduled passenger airlines no longer serving the Airport.



Notes: Percentages may not sum to 100% due to rounding. 1/ Passengers on a multi-destination ticket.

Sources: U.S. DOT T-100, March 2016; U.S. DOT DB1B Survey, March 2016.

Local Trends and Observations

- Airlines at EYW serve a large number of markets via connecting or one-stop service.
- Top 10 markets to/from EYW include New York, Washington, Tampa, Philadelphia, Orlando, Atlanta, Boston, Chicago, Fort Lauderdale, and Charlotte.
- Based on historical data:
  - There are limited correlations between origin and destination (O&D) enplanements and revenues at EYW and local socioeconomic trends.
  - O&D revenues have closely followed socioeconomic trends in the top six non-Florida passenger markets (New York, Washington, Philadelphia, Boston, Chicago, and Charlotte) to/from EYW.



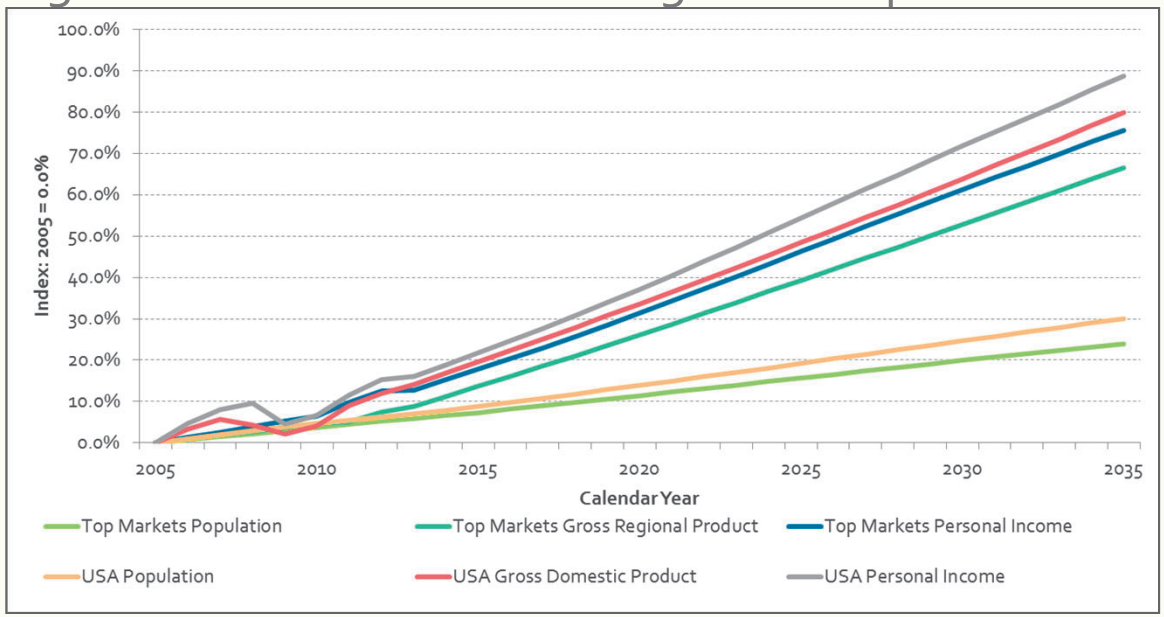
Section Two

BASELINE ENPLANED PASSENGER FORECAST

Draft – For Discussion Purposes Only

Enplaned Passenger Forecast

- Socioeconomic markers for the top six non-Florida passenger markets[1/] are expected to grow throughout the forecast period (2016-2035).
- Demand can be measured in terms of passengers or revenues.
- O&D revenues through 2035 were projected based on projected socioeconomic trends in the top six non-Florida passenger markets.
- Forecasts of enplanements were derived from the projections of O&D revenues by examining passenger contribution to revenue growth at peer airports.



Source: Woods & Poole, Inc., March 2016.

Notes: 1/ New York, Washington, Philadelphia, Boston, Chicago, and Charlotte

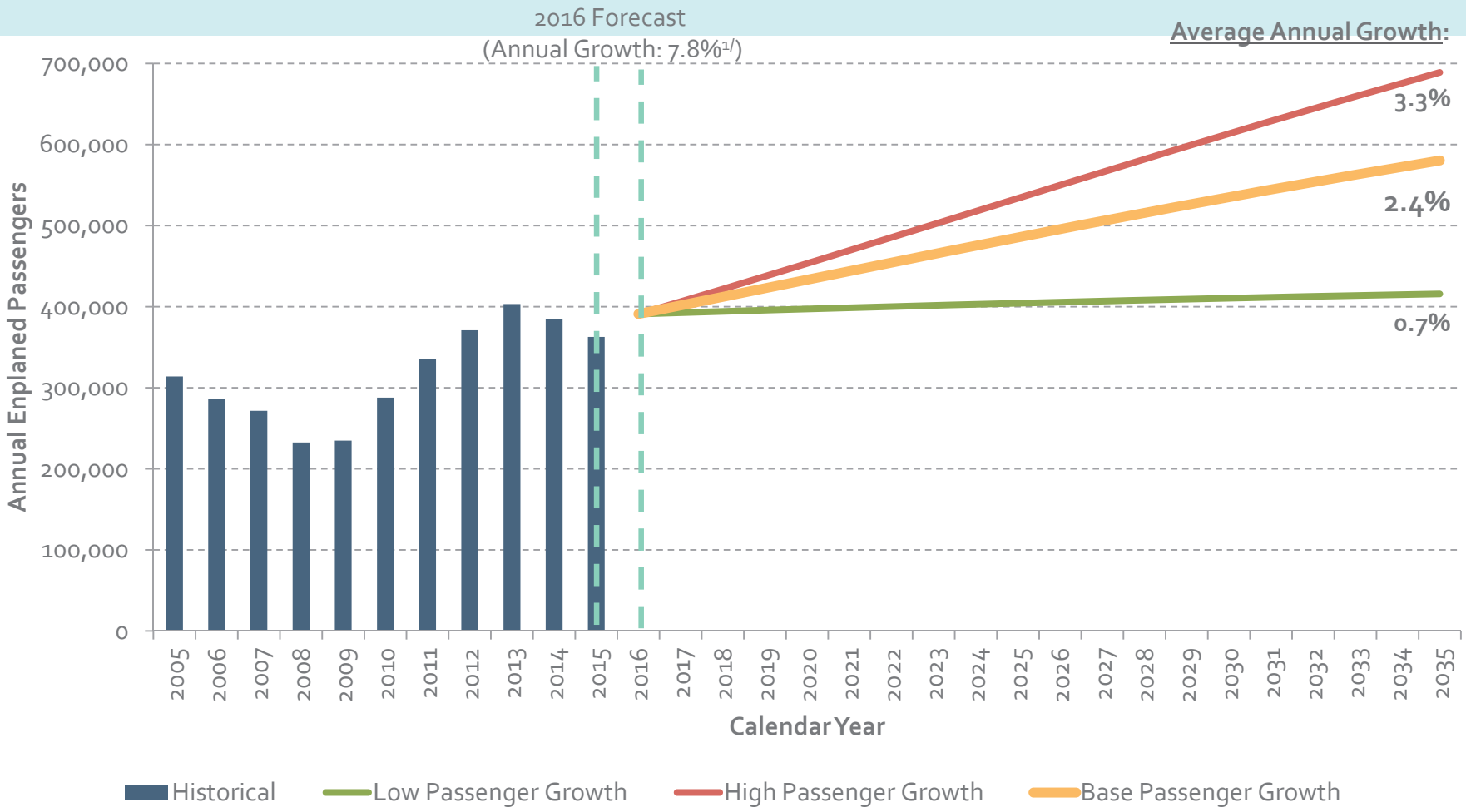
Enplaned Passenger Forecast

	EYW Domestic O&D Revenue ($)	Low Passenger Growth	Base Passenger Growth	High Passenger Growth
Revenue Growth due to Passengers	N/A	17.4%	60.5%	82.9%
Revenue Growth due to Fare	N/A	82.6%	39.6%	17.1%
CY 2015 (Actual)	74,116,100	362,800	362,800	362,800
CY 2035 (Projected)	160,294,700	415,820	580,470	689,150
20-Year CAGR	3.9%	0.7%	2.4%	3.3%

- Passenger growth and fare growth both contribute to revenue growth.
- As the passenger contribution to revenue growth increases, the enplaned passenger projections near the average revenue growth projections at 3.9% on an annual basis.

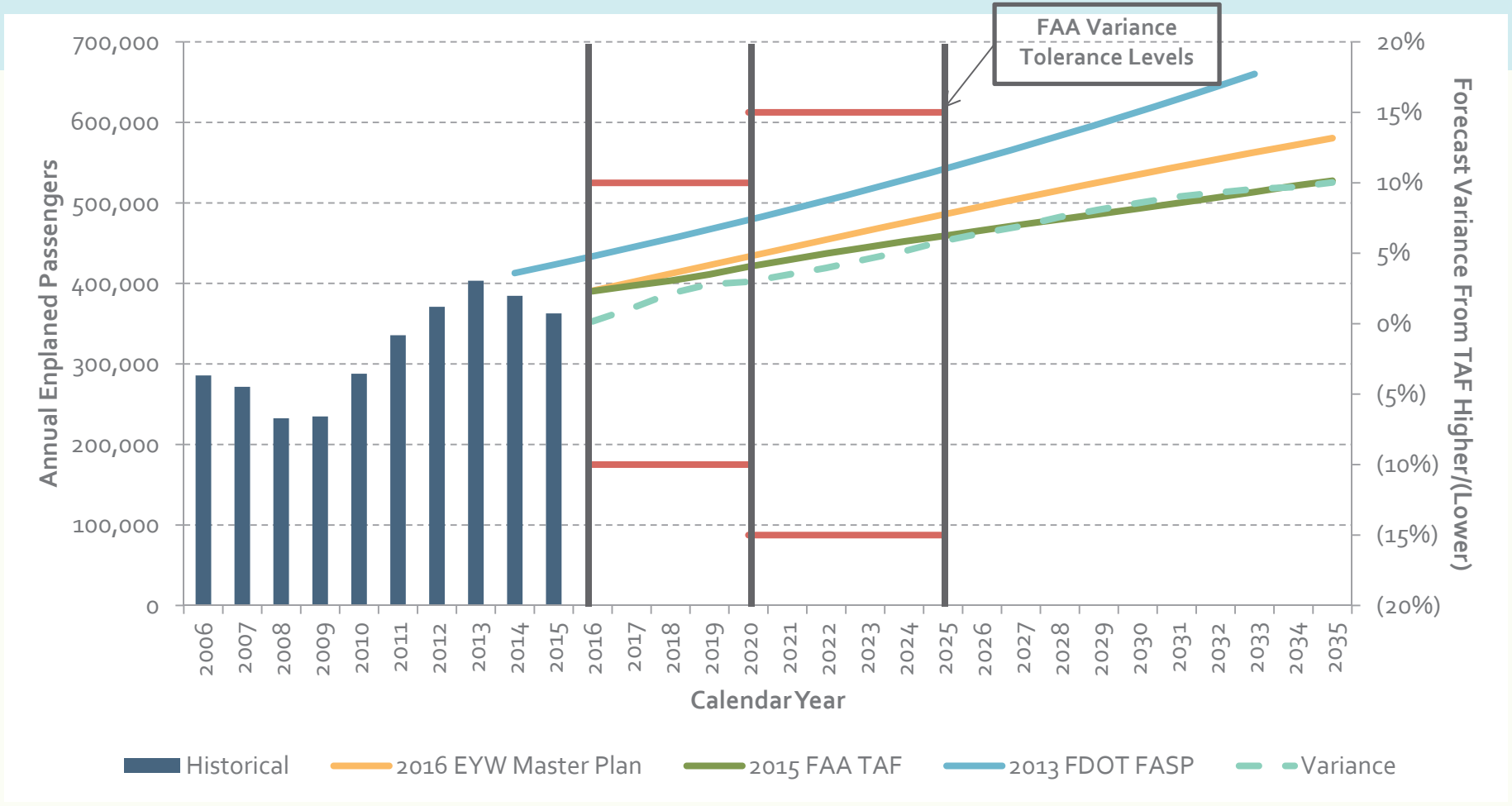
Sources: U.S. DOT DB1B Survey, March 2016; Ricondo & Associates, Inc., March 2016 (analysis).

Enplaned Passenger Forecast



Note: 1/ Scheduled departing seats are expected to increase 6.8% in 2016 from 2015, mostly on carriers with high historic load factors. Total scheduled departing seats in 2016 are expected to be near 2013 levels, when the Airport had its most enplaned passengers.
Sources: U.S. DOT T-100, March 2016; FAA 2015 TAF, March 2016; Ricondo & Associates, Inc., March 2016 (analysis).

TAF Enplaned Passengers Forecast Variance



Note: FAA TAF has been adjusted from fiscal year to calendar year.

Sources: U.S. DOT T-100, March 2016 (historical); Ricondo & Associates, Inc., March 2016 (analysis).



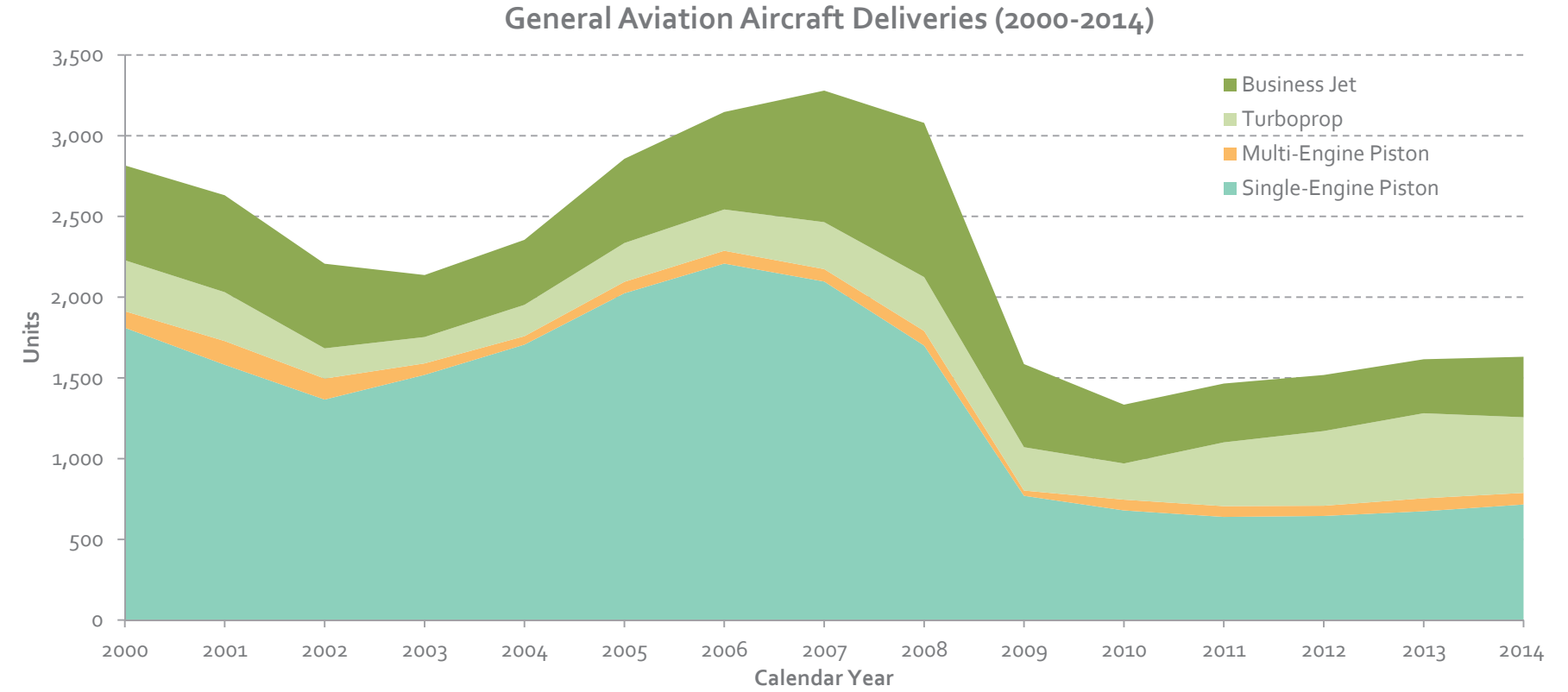
Section Three

GENERAL AVIATION ACTIVITY FORECASTS



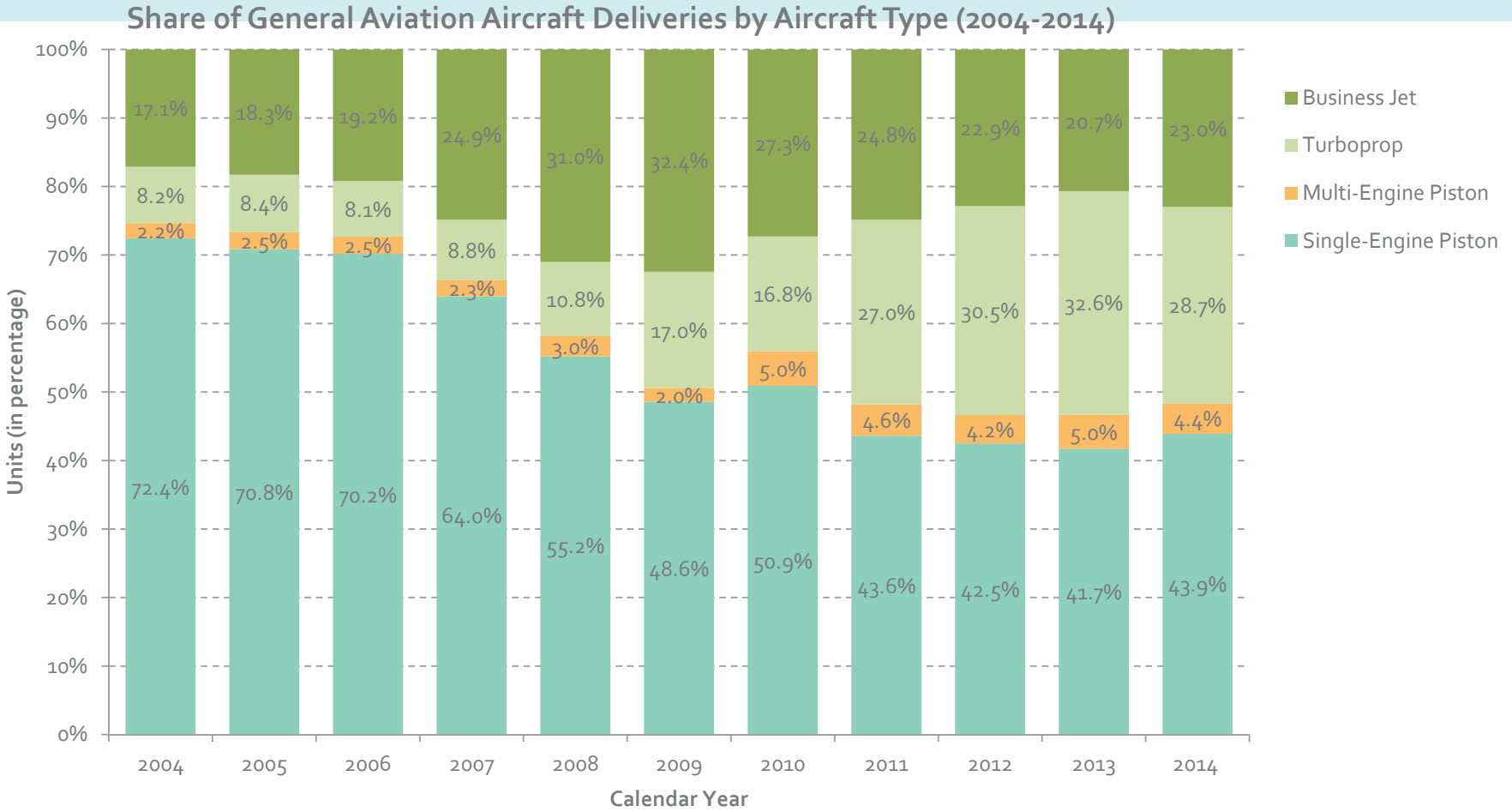
Global General Aviation Market Trends

- Through the end of 2008, the general aviation (GA) market was booming.
- Orders for new GA aircraft, however, fell dramatically in 2009 and 2010 as a result of the global economic downturn.



Sources: *GAMA, 2015 General Aviation Statistical Databook & 2016 Industry Outlook.*

Global General Aviation Market Trends

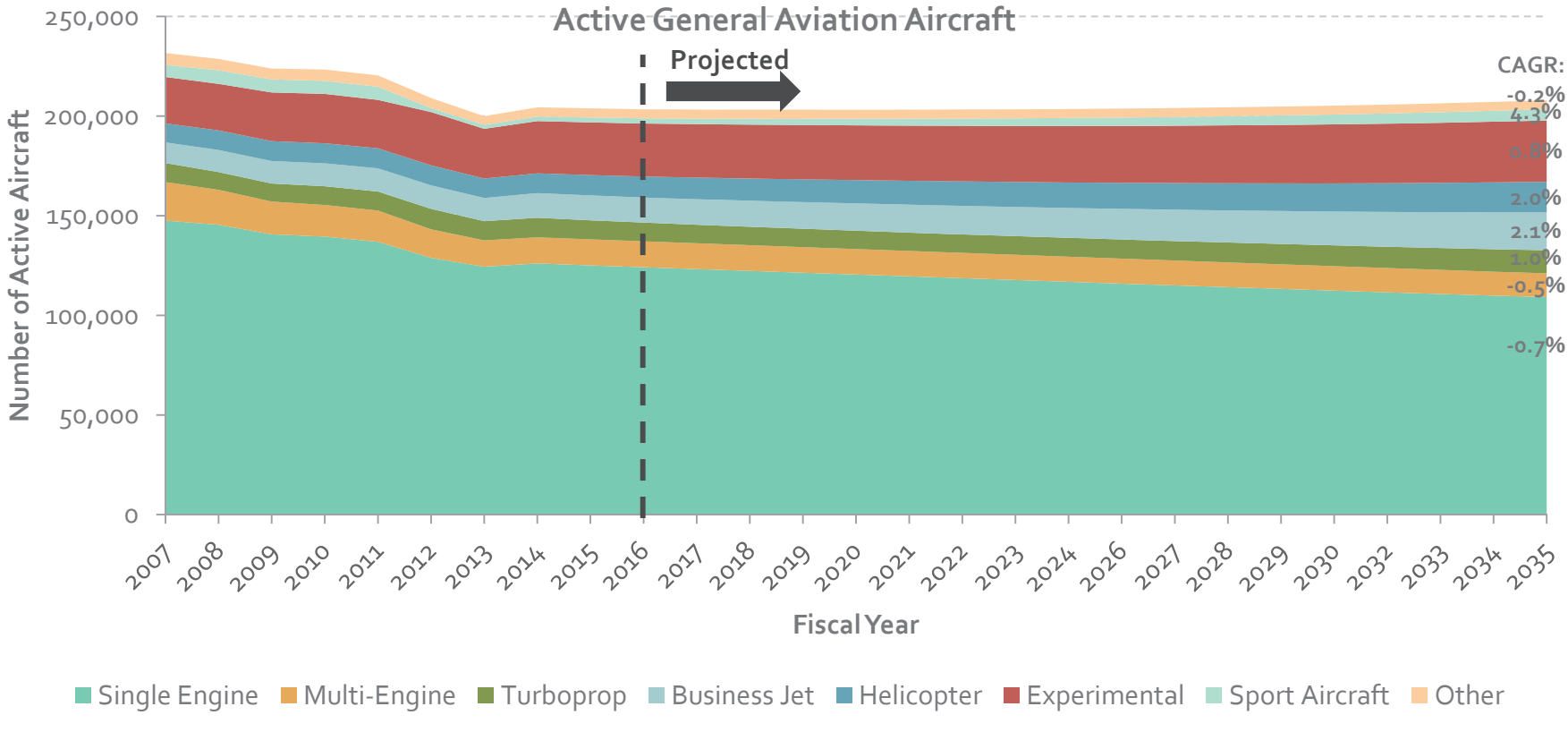


Note: Percentages may not sum to 100 percent due to rounding.

Sources: GAMA, *2015 General Aviation Statistical Databook & 2016 Industry Outlook.*

U.S. General Aviation Market Trends

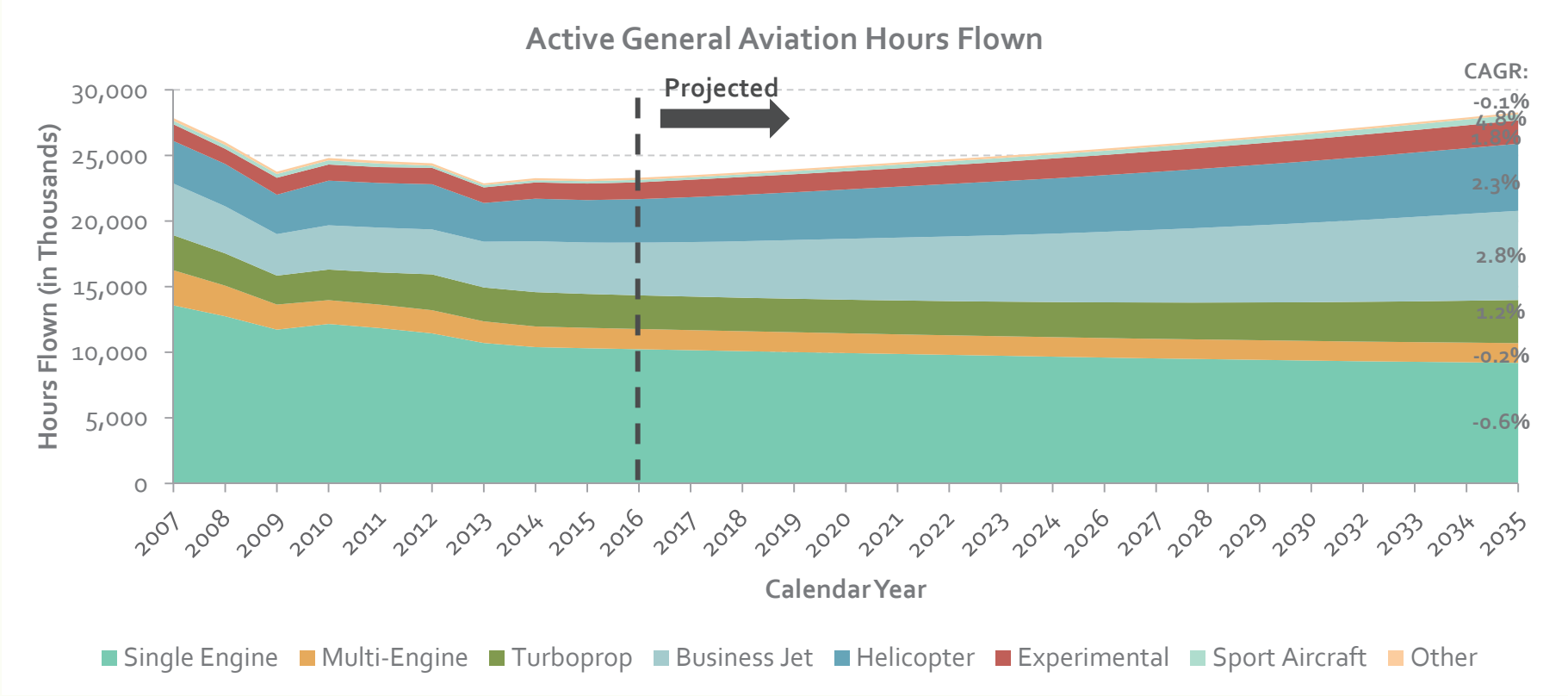
- Domestically, the FAA anticipates the active general aviation fleet to increase at an average annual rate of 0.2 percent through 2035.
- The business jet fleet is projected to grow at an average rate of 2.1 percent through 2035.



Source: *FAA Aerospace Forecast: Fiscal Years 2016-2036*, June 2016.

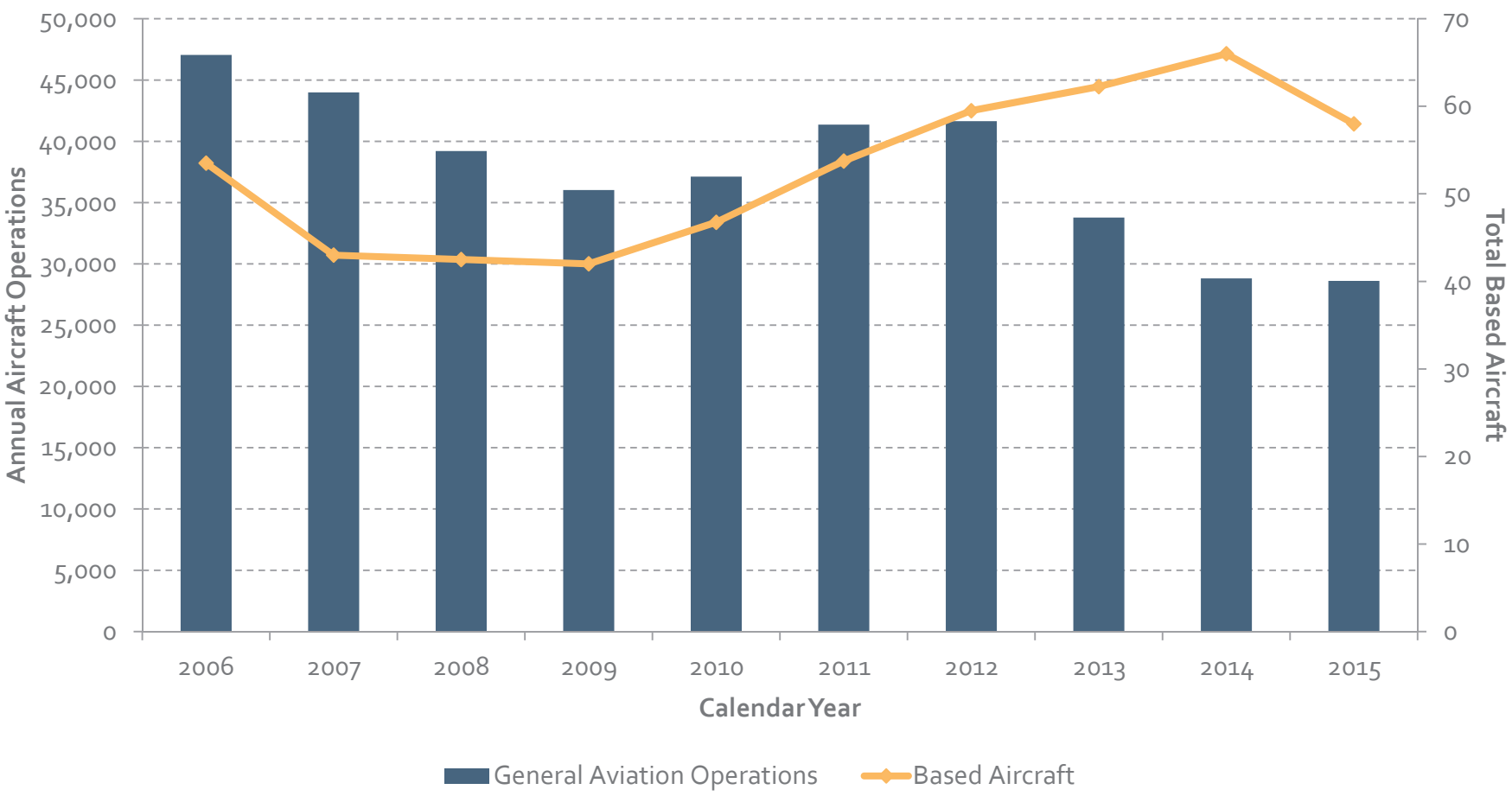
U.S. General Aviation Market Trends

- The total number of general aviation hours flown is projected to increase by 1.2 percent yearly over the forecast period.
- Hours flown by jet aircraft are forecast to increase at an average annual rate of 2.8 percent over the forecast period.



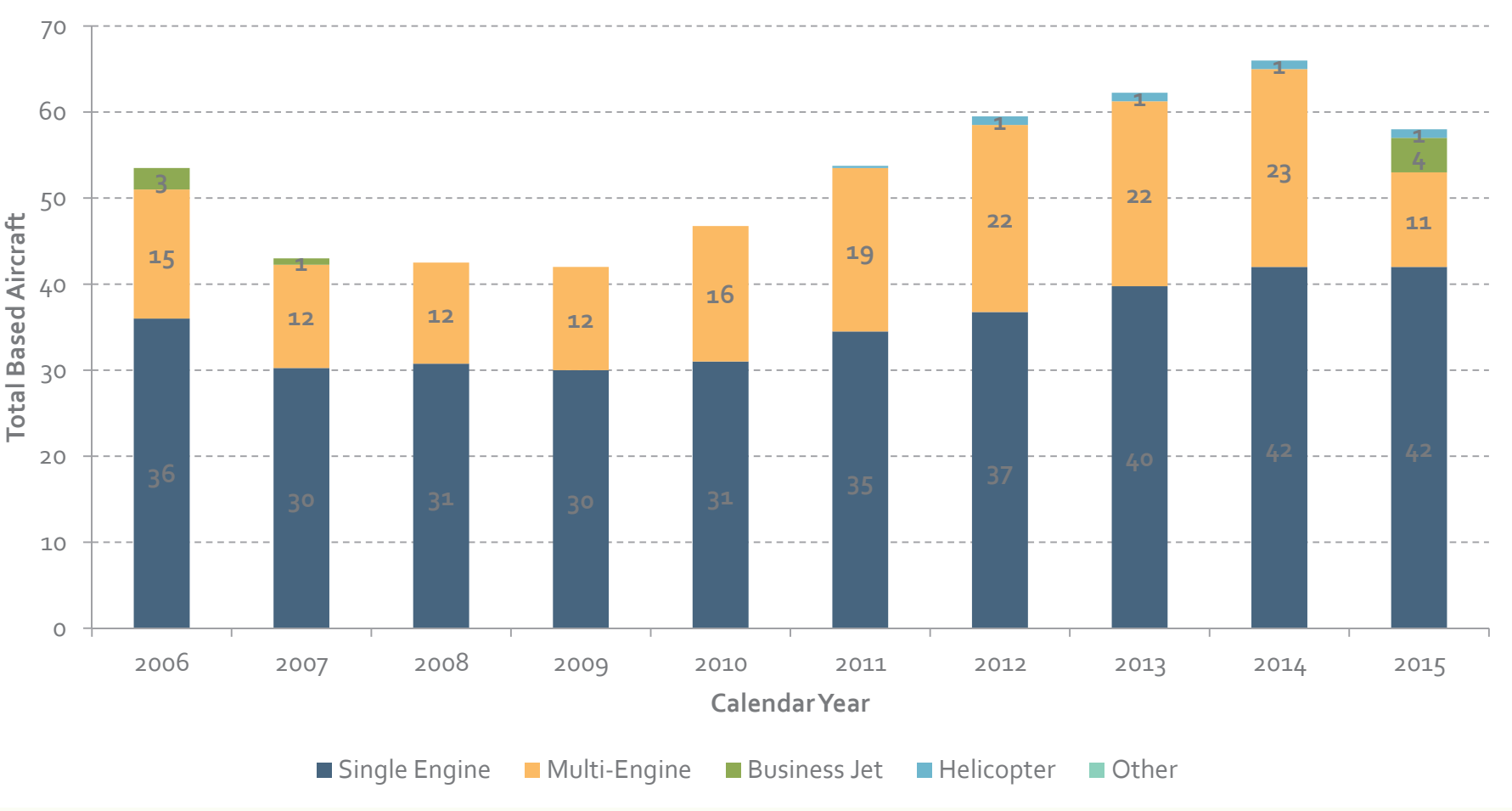
Source: *FAA Aerospace Forecast: Fiscal Years 2016-2036*, June 2016.

Key West Annual Historic General Aviation Operations and Based Aircraft



Sources: FAA, April 2016.

Key West Historic Based Aircraft by Aircraft Type

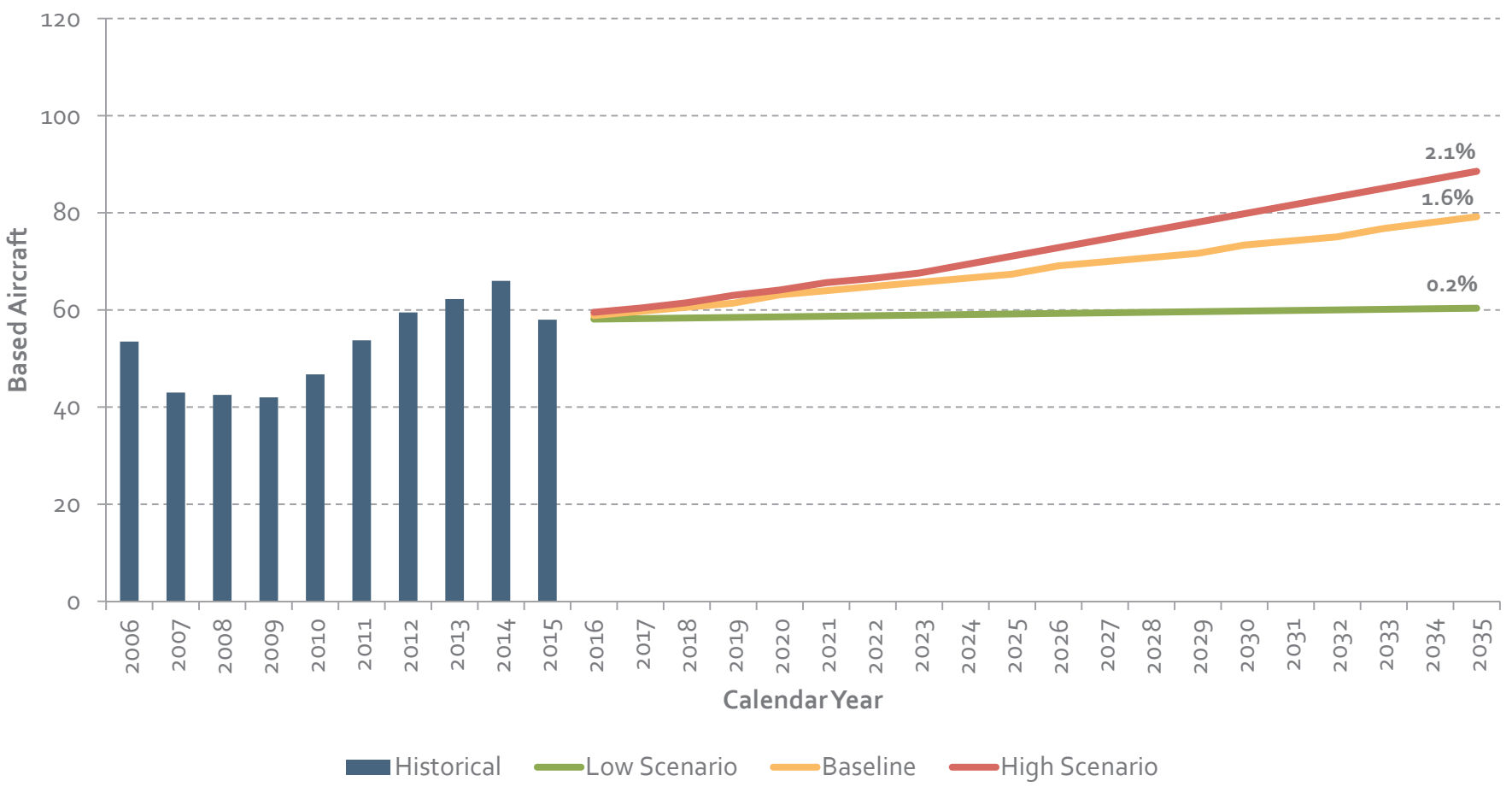


Sources: FAA, April 2016.

General Aviation Forecast Methodology and Assumptions

- Forecasts based on existing national forecasts
  - 2016-2036 FAA Aerospace Forecast
  - 2015 FAA TAF for EYW
  - 2013-2033 Florida Department of Transportation Florida Aviation System Plan
- Based aircraft
  - Growth from 2015 based aircraft proportional to growth in national forecasts
  - Fleet mix evolution similar to TAF (higher proportion of multi-engine and jet aircraft)
- Operations
  - Growth from 2015 operations proportional to growth in national forecasts

Based Aircraft Forecast



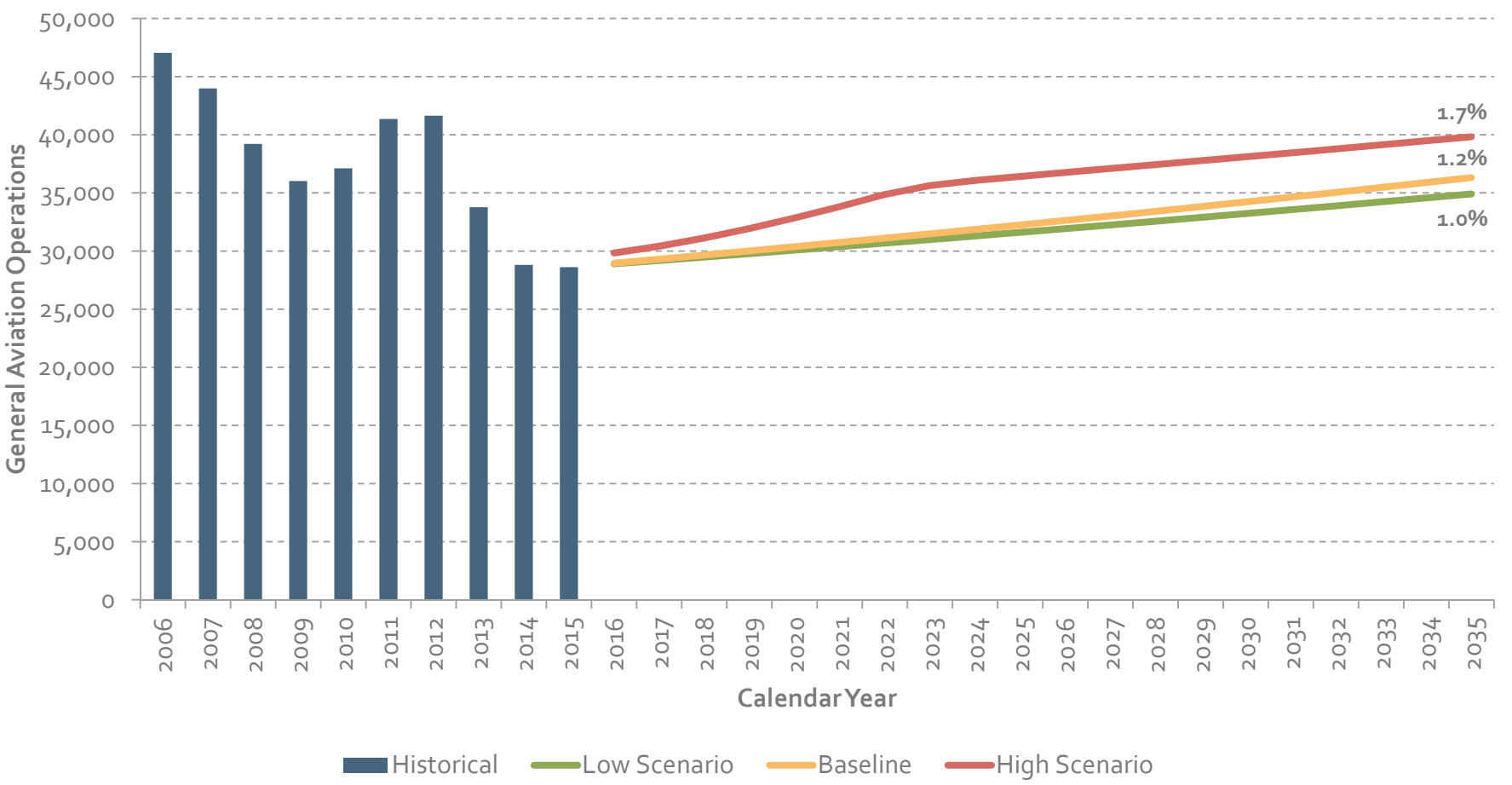
Sources: FAA, April 2016 (historical); McFarland Johnson, Inc., May 2016 (forecast).

Based Aircraft Fleet Mix Forecast

	Single Engine	Multi-Engine	Jet	Helicopter	Total
Historical					
CY2015	42	11	4	1	58
Forecast					
CY 2020	43	14	5	1	63
CY 2025	44	16	6	1	67
CY 2035	47	23	8	1	79

Sources: McFarland Johnson, Inc., May 2016.

General Aviation Operations Forecast



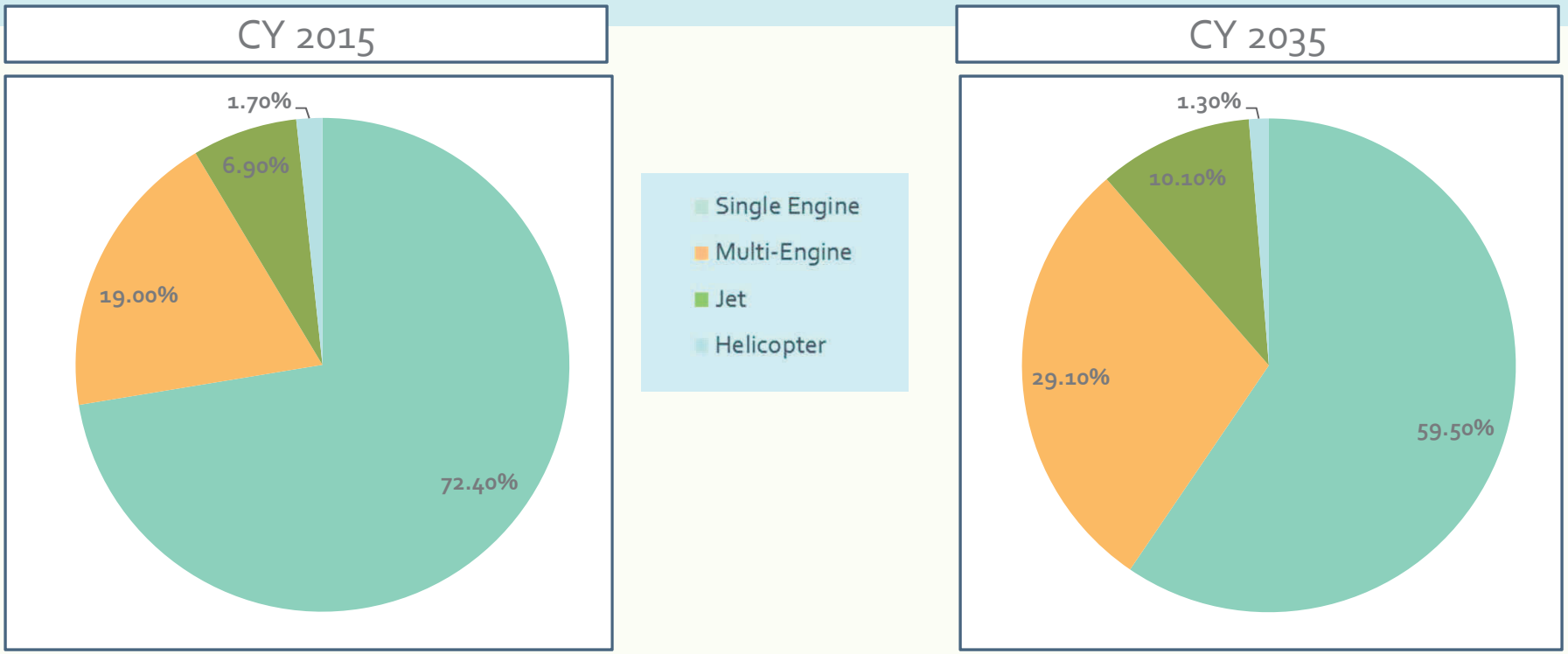
Sources: FAA, April 2016 (historical); McFarland Johnson, Inc., May 2016 (forecast).

General Aviation Operations Fleet Mix Forecast

	Single Engine		Multi-Engine		Jet		Helicopter	
	Operations	Share	Operations	Share	Operations	Share	Operations	Share
Historical								
CY 2015	20,716	72.4%	5,436	19.0%	1,974	6.9%	486	1.7%
Forecast								
CY 2020	20,743	68.3%	6,742	22.2%	2,399	7.9%	486	1.6%
CY 2025	21,180	65.7%	7,705	23.9%	2,901	9.0%	451	1.5%
CY 2035	21,612	59.5%	10,569	29.1%	3,668	10.1%	472	1.3%

Sources: McFarland Johnson, Inc., May 2016.

General Aviation Operations Fleet Mix Forecast



Sources: McFarland Johnson, Inc., May 2016.



Section Four

BASELINE AIRCRAFT OPERATIONS FORECAST

Operations Forecast

- Passenger airline operations
  - Average passenger aircraft size is expected to grow throughout the forecast period
  - Average load factor is expected to remain consistent throughout the forecast period
- All-cargo operations
  - Cargo trends in South Florida were projected based on socioeconomic regression analysis and projected socioeconomic growth
  - EYW is expected to maintain its current share of cargo volume in South Florida
  - Average cargo volume per operation is expected to remain constant throughout the forecast period
- Other air taxi operations
  - Other air taxi operations are expected to account for 20 percent of total air carrier and air taxi operations, based on recent trends
- General aviation operations
  - General aviation operations are expected to grow according to projected growth in national general aviation hours flown
- Military operations
  - Military operations are held constant at 2015 levels throughout the forecast period
- Critical aircraft group: Boeing 737-700 or similar

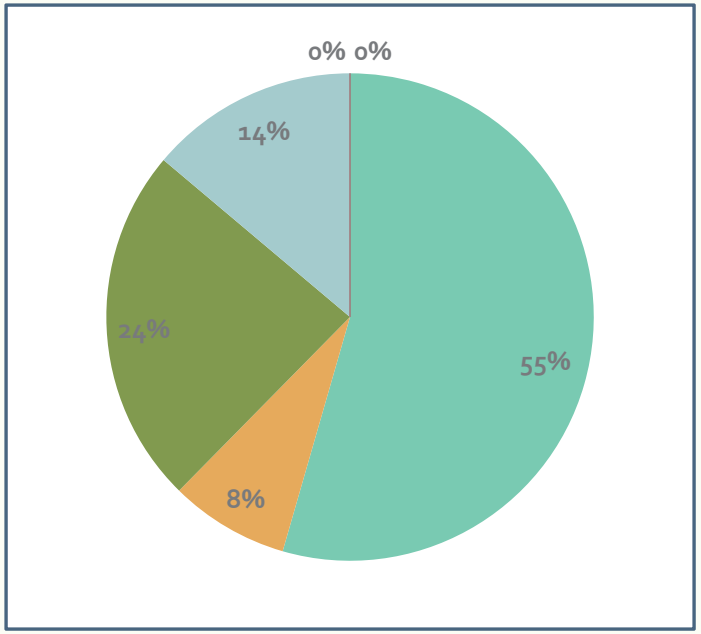
Operations Fleet Mix Forecast

		2015		2020		2025		2035	
AIRCRAFT CATEGORY	SEAT RANGE	Ops	%	Ops	%	Ops	%	Ops	%
PASSENGER									
Small Piston/Turboprop/Regional Jet	<51	10,204	55%	12,667	57%	10,525	46%	1,588	6%
Medium Regional Jet/Turboprop	51-76	1,527	8%	1,299	6%	2,649	12%	11,023	45%
Large Regional Jet/Turboprop	77-100	4,399	24%	4,999	23%	5,061	22%	5,337	22%
Small Narrowbody	101-130	2,521	14%	2,334	11%	2,985	13%	1,531	6%
Medium Narrowbody	131-150	0	0%	757	3%	1,612	7%	5,019	20%
Large Narrowbody/Widebody	151+	0	0%	0	0%	0	0%	0	0%
Total		**18,651**	**100%**	**22,056**	**100%**	**22,832**	**100%**	**24,498**	**100%**
CARGO									
Small Piston/Turboprop		729	100%	854	100%	984	100%	1,247	100%
GENERAL AVIATION		28,612	100%	30,370	100%	32,237	100%	36,321	100%

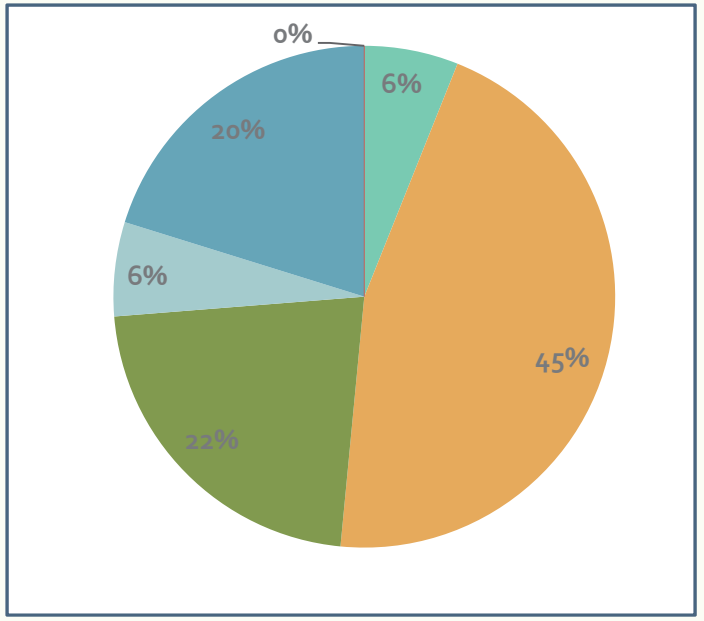
Source: Ricondo & Associates, Inc., June 2016.

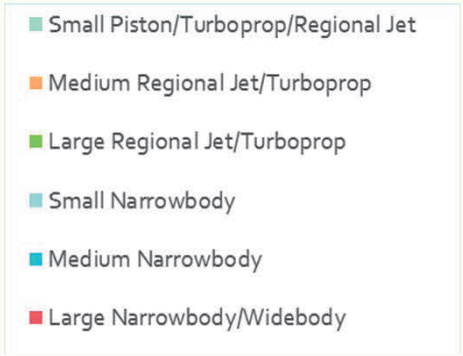
Passenger Operations Fleet Mix Forecast

CY 2015



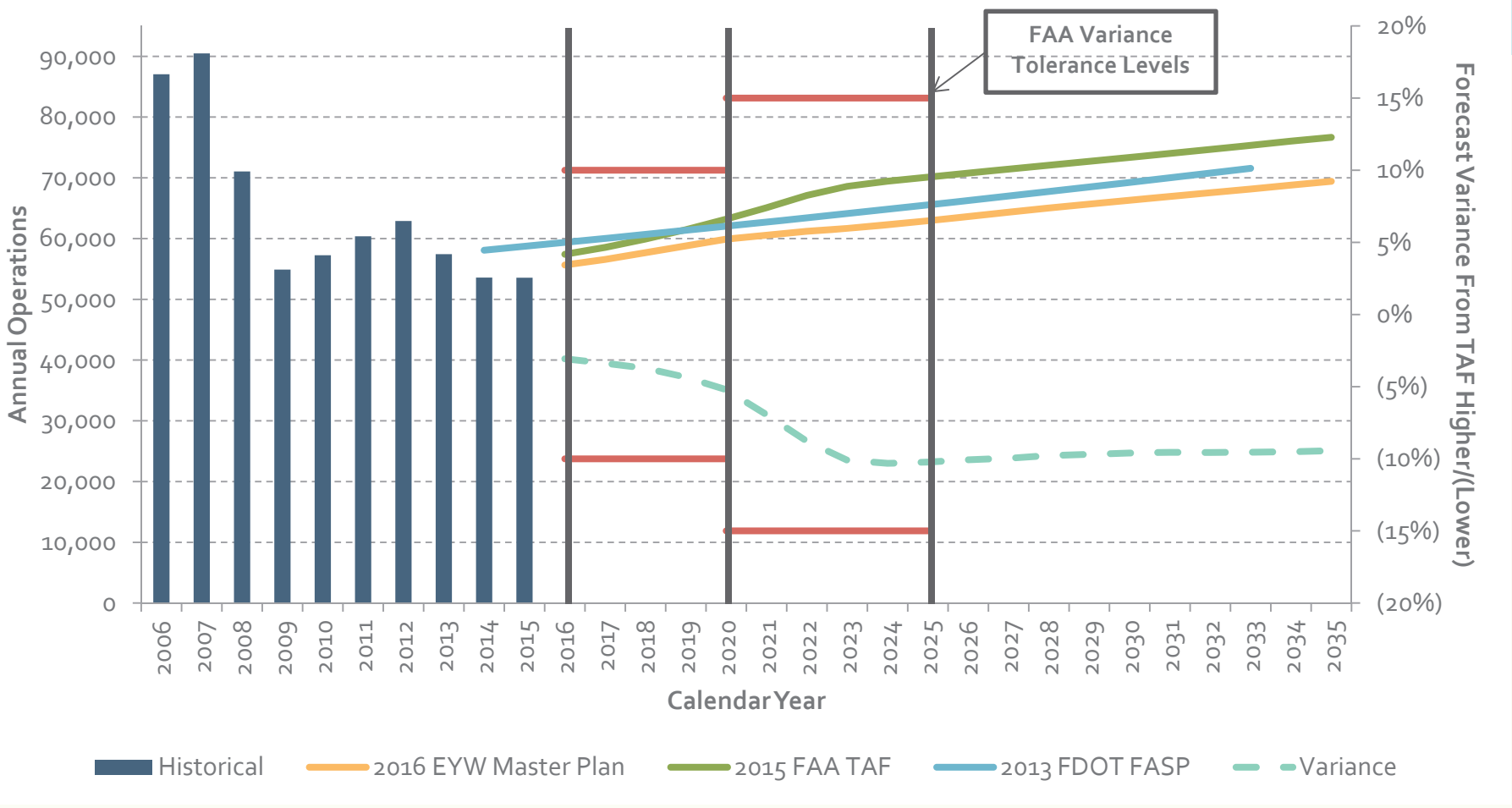
CY 2035





Source: Ricondo & Associates, Inc., June 2016.

TAF Operations Forecast Variance



Note: FAA TAF has been adjusted from fiscal year to calendar year.

Sources: U.S. DOT T-100, March 2016; Ricondo & Associates, Inc., May 2016 (analysis).



Section Five

ALTERNATE DEMAND SCENARIOS

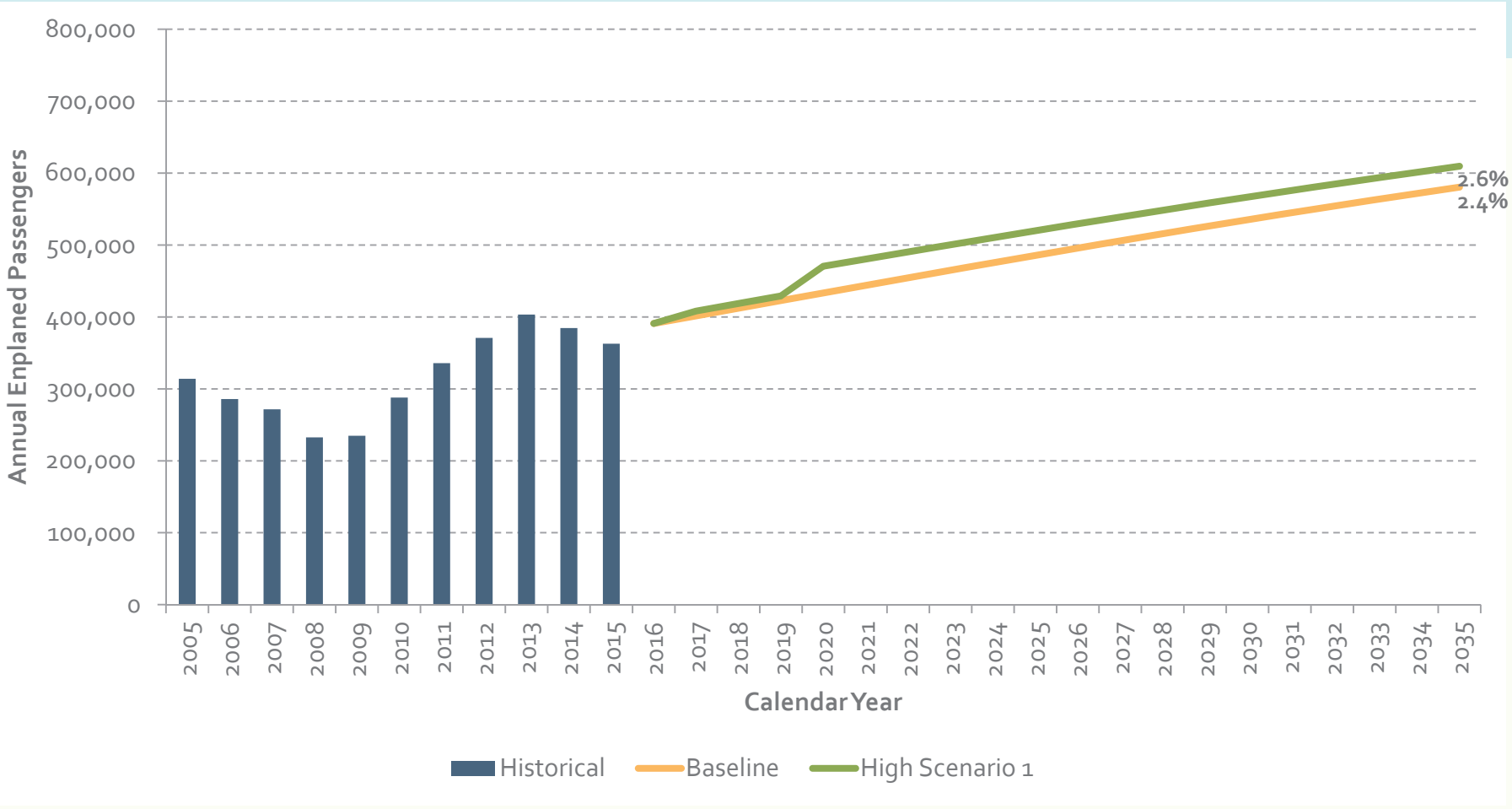
Forecast Scenarios

- High Scenario 1 – New nonstop service
  - Twice-weekly mainline service beyond Florida begins in 2017
  - Twice-daily large regional jet/mainline intra-Florida service begins in 2020
  - Not all traffic is incremental
- High Scenario 2 – New Cuba Service
  - New turboprop/small regional jet service to three Cuban destinations beginning in 2017
  - Additional up-line demand is generated by this new service
- High Scenario 3 – Longer Runway
  - Growth occurs as additional capacity to existing destinations and new destinations
  - Existing O&D demand patterns influenced new service
  - Activity was modeled considering of existing Florida beach/coastal commercial airport service
- Low Scenario – Recession event
  - Two year recession event modeled to begin in 2019 in a similar magnitude of the 2007/2008 recession
  - After a three year recovery period, growth resumes as initially forecast

Longer Runway Forecast Scenario

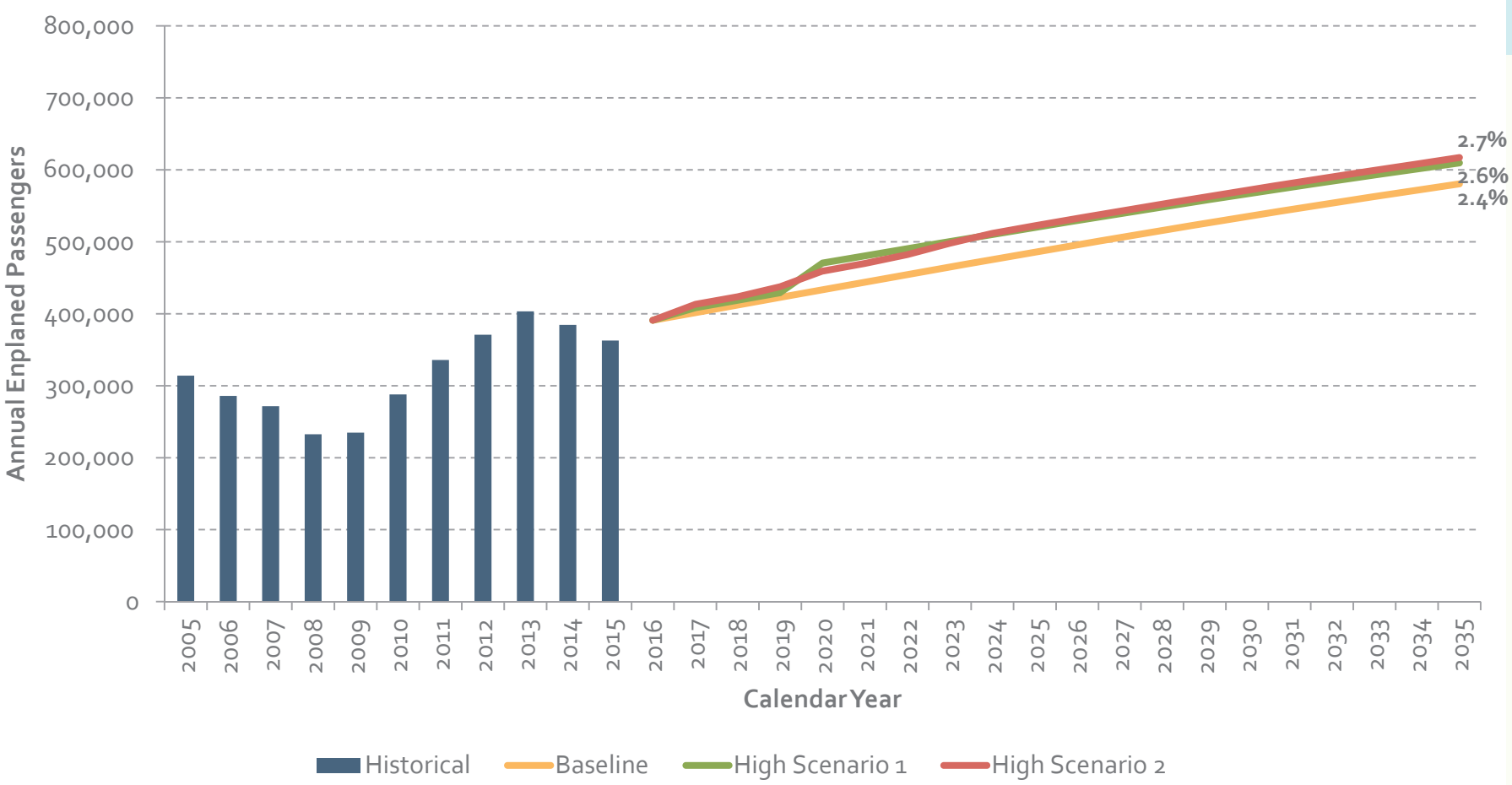
- Growth will be phased in over time as demand at EYW grows
- Aircraft size and route profiles are expected to be comparable to other coastal airports (e.g. ECP, MLB, NAS, SAV, SRQ ,VPS)
- Longer runways will allow existing service to be upgauged (e.g. ATL from B737-700 to B737-800/MD-90; MIA from E-175 to A319/B737-800)
- Most new service will be airline hubs that serve EYW's highest demand O&D markets (e.g. BOS, DFW, EWR, ORD, PHL, etc.)
- Limited seasonal or charter service to Canada and Europe has been assumed
- Critical aircraft group: Airbus A320, Boeing 737-800, or similar

Enplaned Passenger Forecast Scenarios



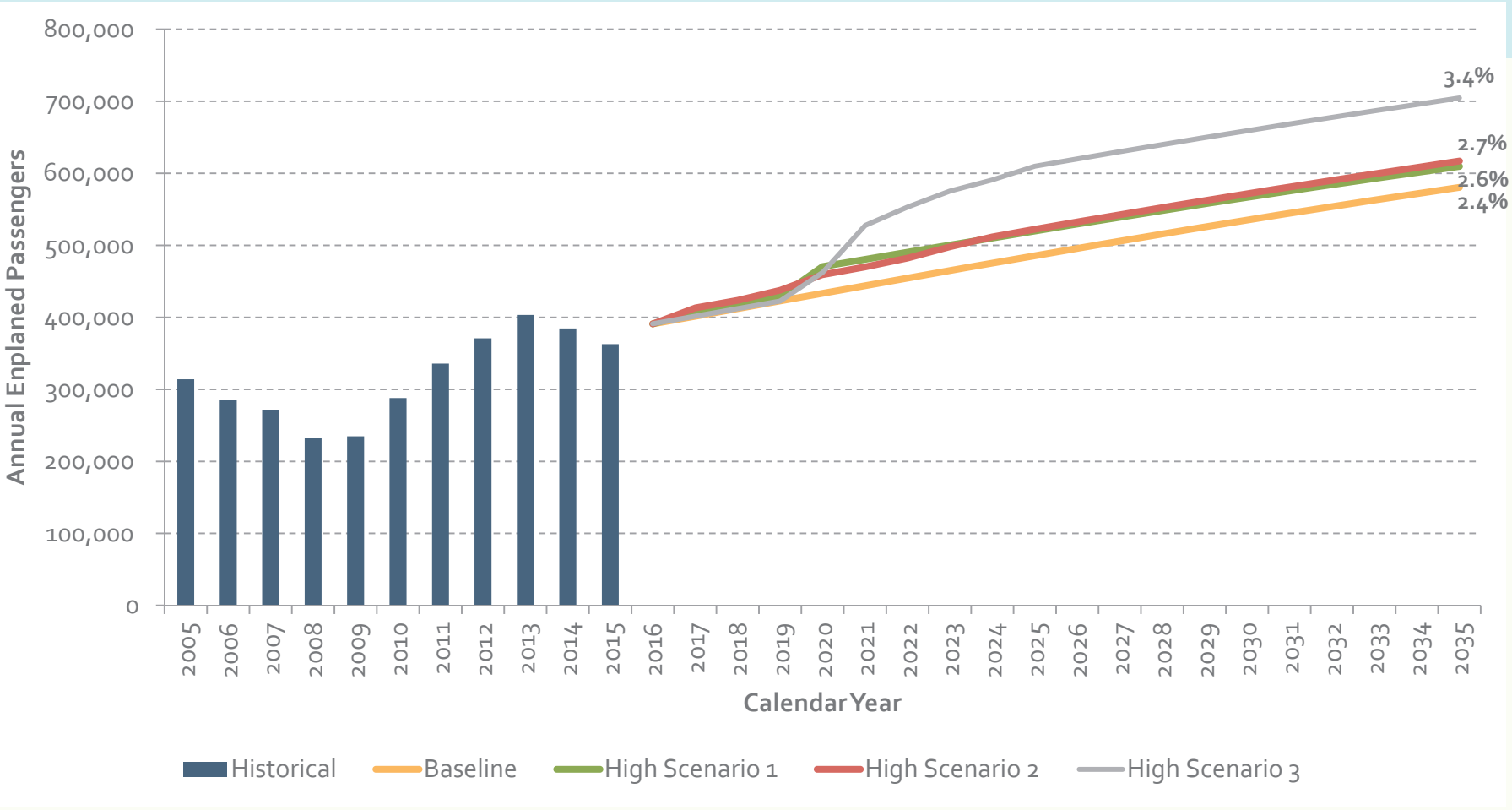
Sources: U.S. DOT T-100, March 2016 (historical); Ricondo & Associates, Inc., June 2016 (forecast).

Enplaned Passenger Forecast Scenarios



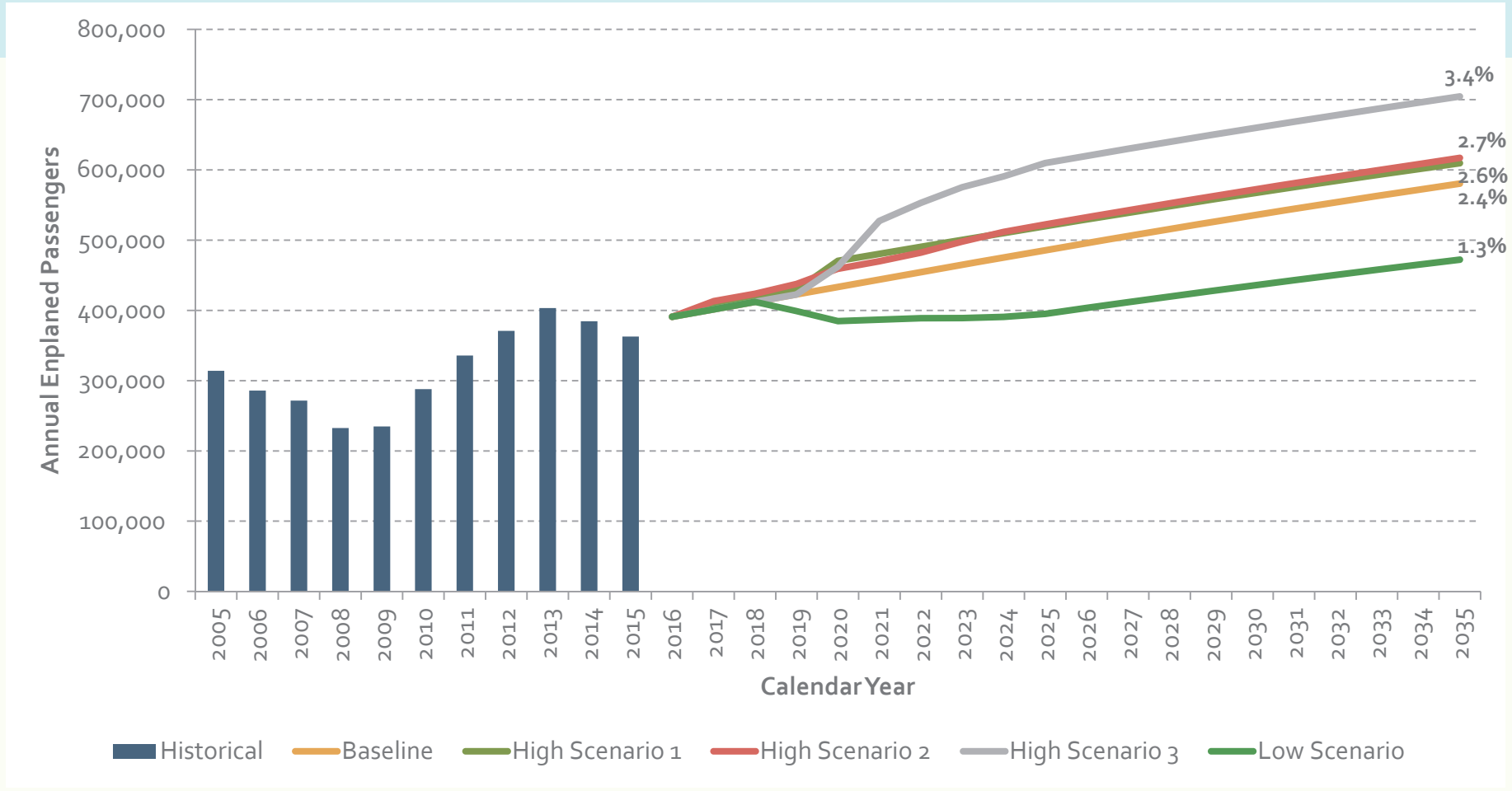
Sources: U.S. DOT T-100, March 2016 (historical); Ricondo & Associates, Inc., June 2016 (forecast).

Enplaned Passenger Forecast Scenarios



Sources: U.S. DOT T-100, March 2016 (historical); Ricondo & Associates, Inc., June 2016 (forecast).

Enplaned Passenger Forecast Scenarios



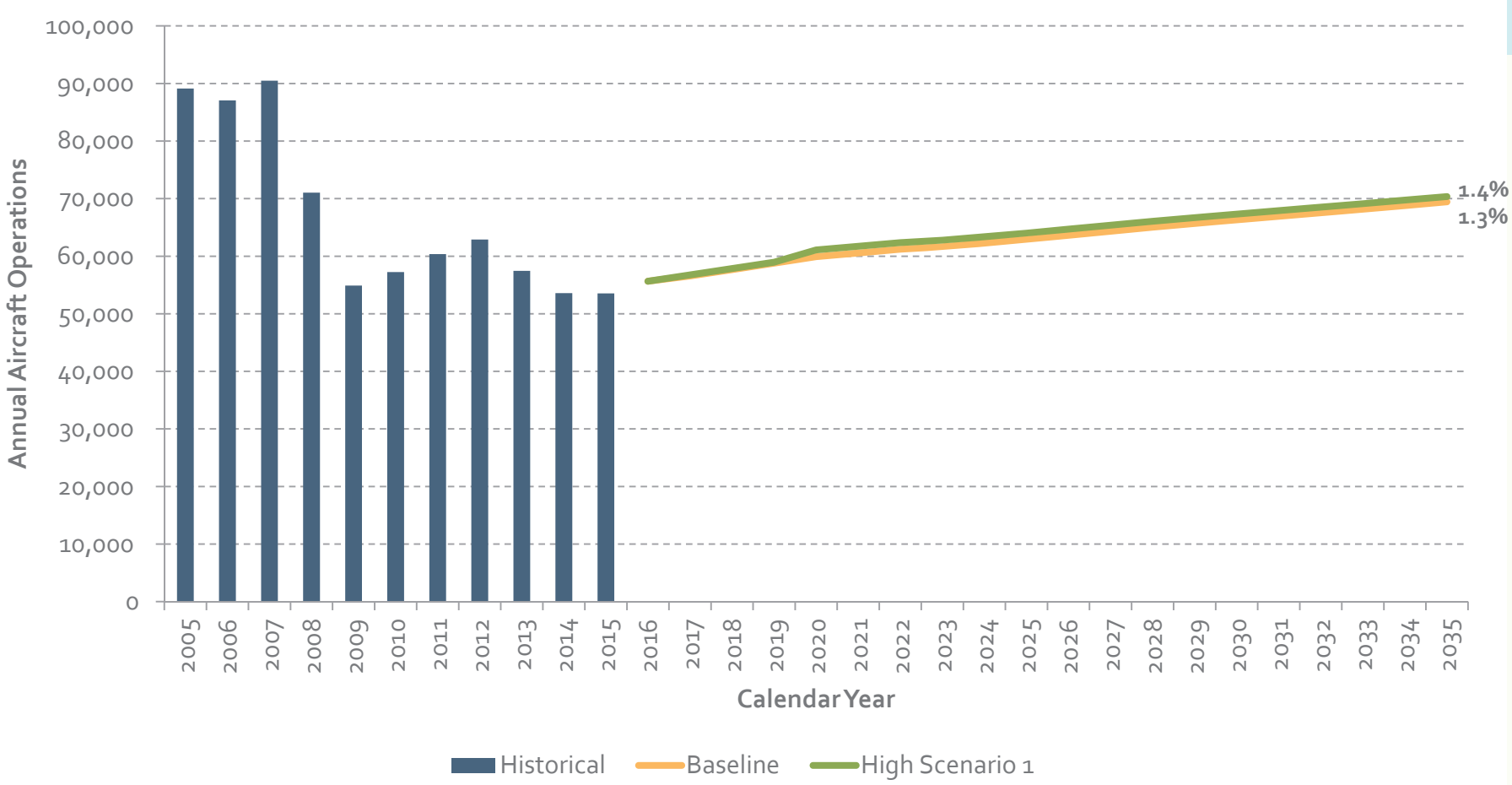
Sources: U.S. DOT T-100, March 2016 (historical); Ricondo & Associates, Inc., June 2016 (forecast).

Alternate Scenarios Enplaned Passenger Forecasts Summary

	Baseline	High Scenario 1	High Scenario 2		High Scenario 3		Low Scenario
CY	Total	Total	Total	Intl.	Total	Intl.	Total
Historical							
2015	362,802	362,802	362,802	-	362,802	-	362,802
Forecast							
2020	433,318	470,443	459,324	13,385	462,332	-	384,787
2025	485,707	519,974	522,258	18,793	609,804	8,580	395,159
2035	580,474	609,571	617,025	21,810	704,571	15,721	472,259

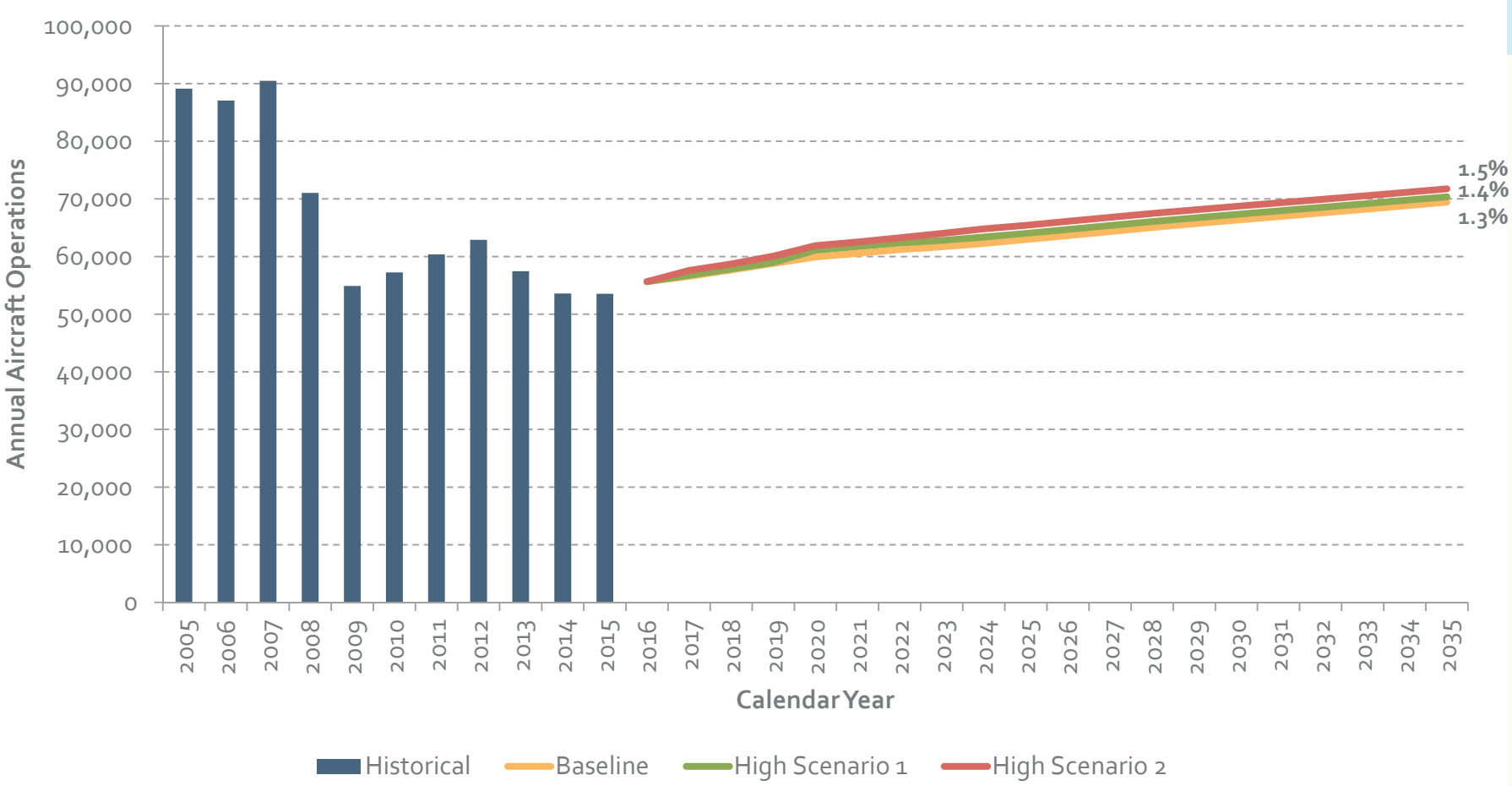
Source: Ricondo & Associates, Inc., June 2016.

Operations Forecast Scenarios



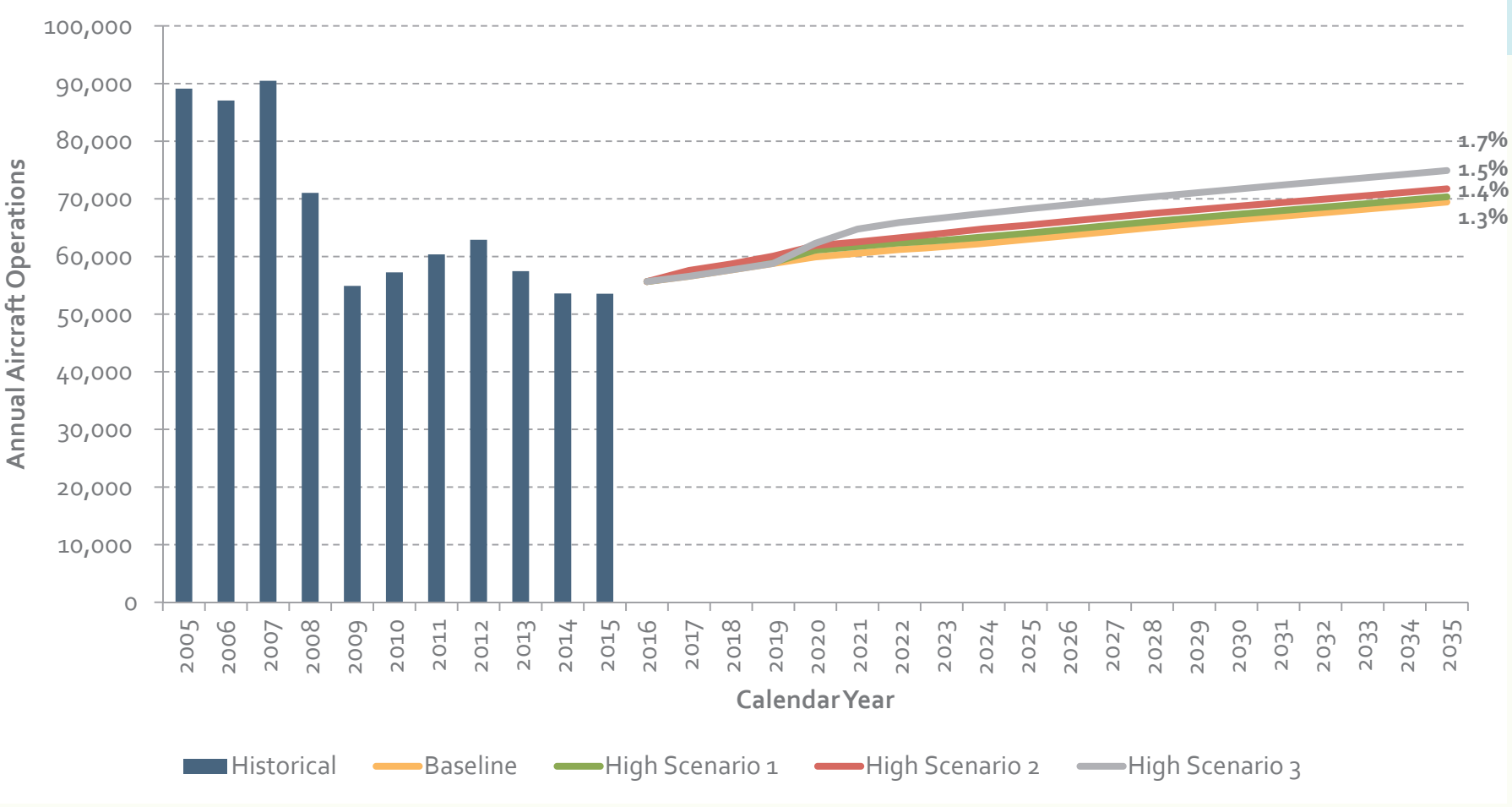
Sources: U.S. DOT T-100, March 2016 (historical);FAA, March 2016 (historical); Ricondo & Associates, Inc., June 2016 (forecast).

Operations Forecast Scenarios



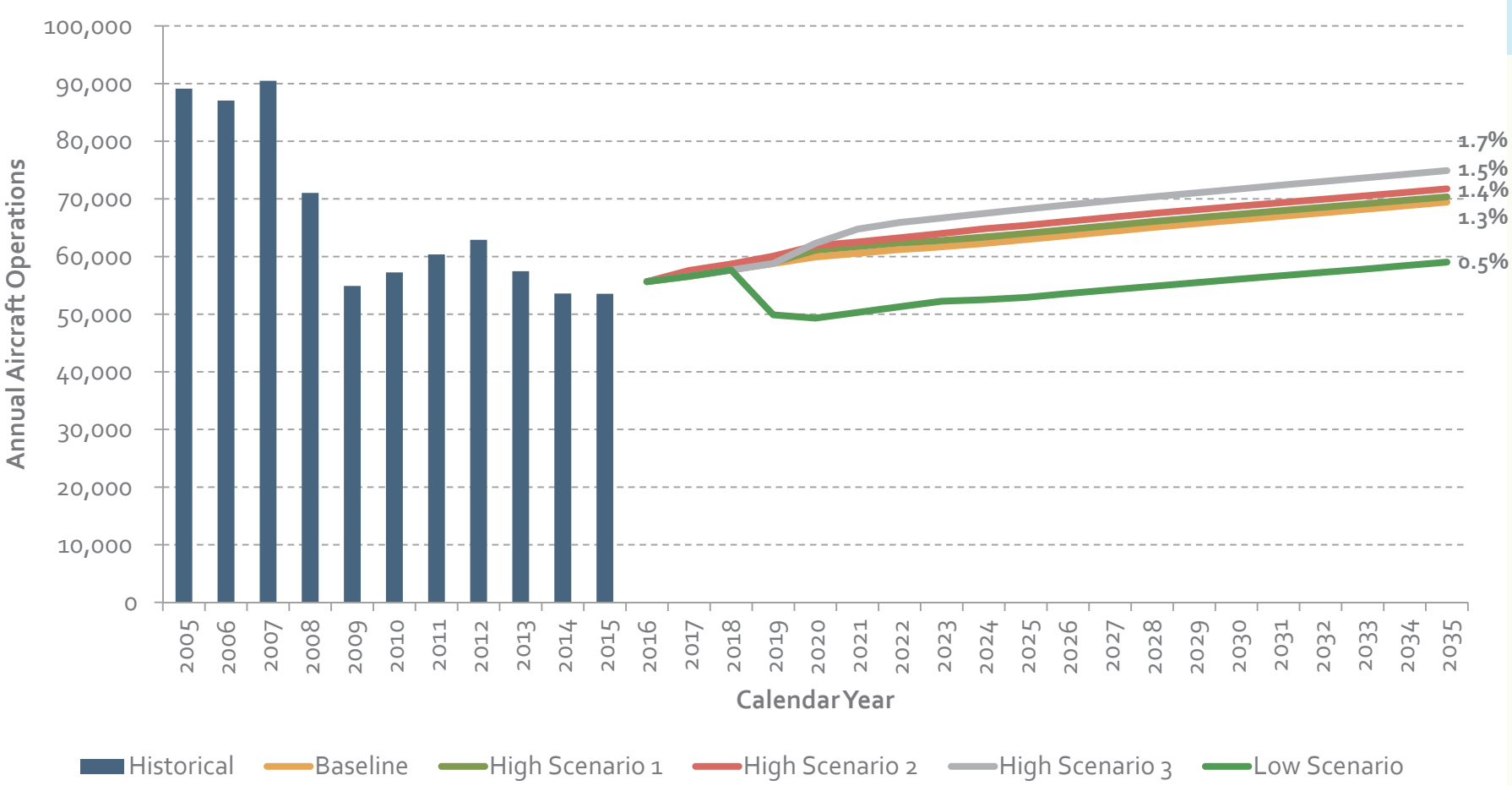
Sources: U.S. DOT T-100, March 2016 (historical);FAA, March 2016 (historical); Ricondo & Associates, Inc., June 2016 (forecast).

Operations Forecast Scenarios



Sources: U.S. DOT T-100, March 2016 (historical);FAA, March 2016 (historical); Ricondo & Associates, Inc., June 2016 (forecast).

Operations Forecast Scenarios



Sources: U.S. DOT T-100, March 2016 (historical);FAA, March 2016 (historical); Ricondo & Associates, Inc., June 2016 (forecast).

Alternate Scenarios Operations Forecasts Summary

	Baseline	High Scenario 1	High Scenario 2	High Scenario 3	Low Scenario
Calendar Year					
Historical					
2015	53,548	53,548	53,548	53,548	53,548
Forecast					
2020	59,912	61,085	61,884	62,294	49,321
2025	62,920	64,006	65,408	68,231	52,906
2035	64,435	70,366	71,742	74,909	59,027

Source: Ricondo & Associates, Inc., June 2016.

OPEN DISCUSSION/NEXT STEPS

Open Discussion/Next Steps

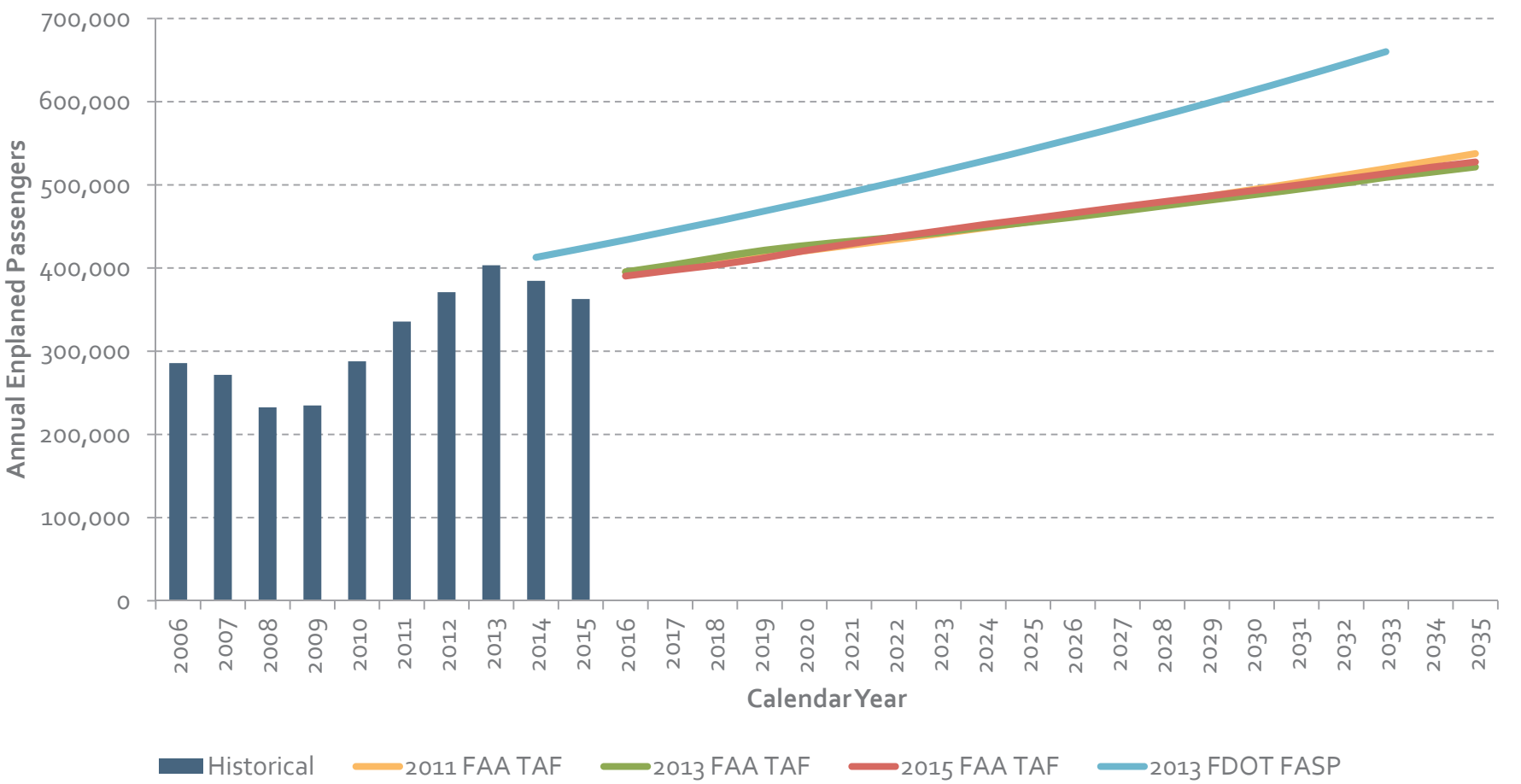
- Submit Aviation Activity Forecasts to FAA
- Initiate Demand/Capacity and Facility Requirements Analyses
- Complete Ground Surveys and Planimetric Base Map

Thank You!

Key West International Airport Master Plan Update
Technical Review Committee #1

ADDITIONAL SLIDES

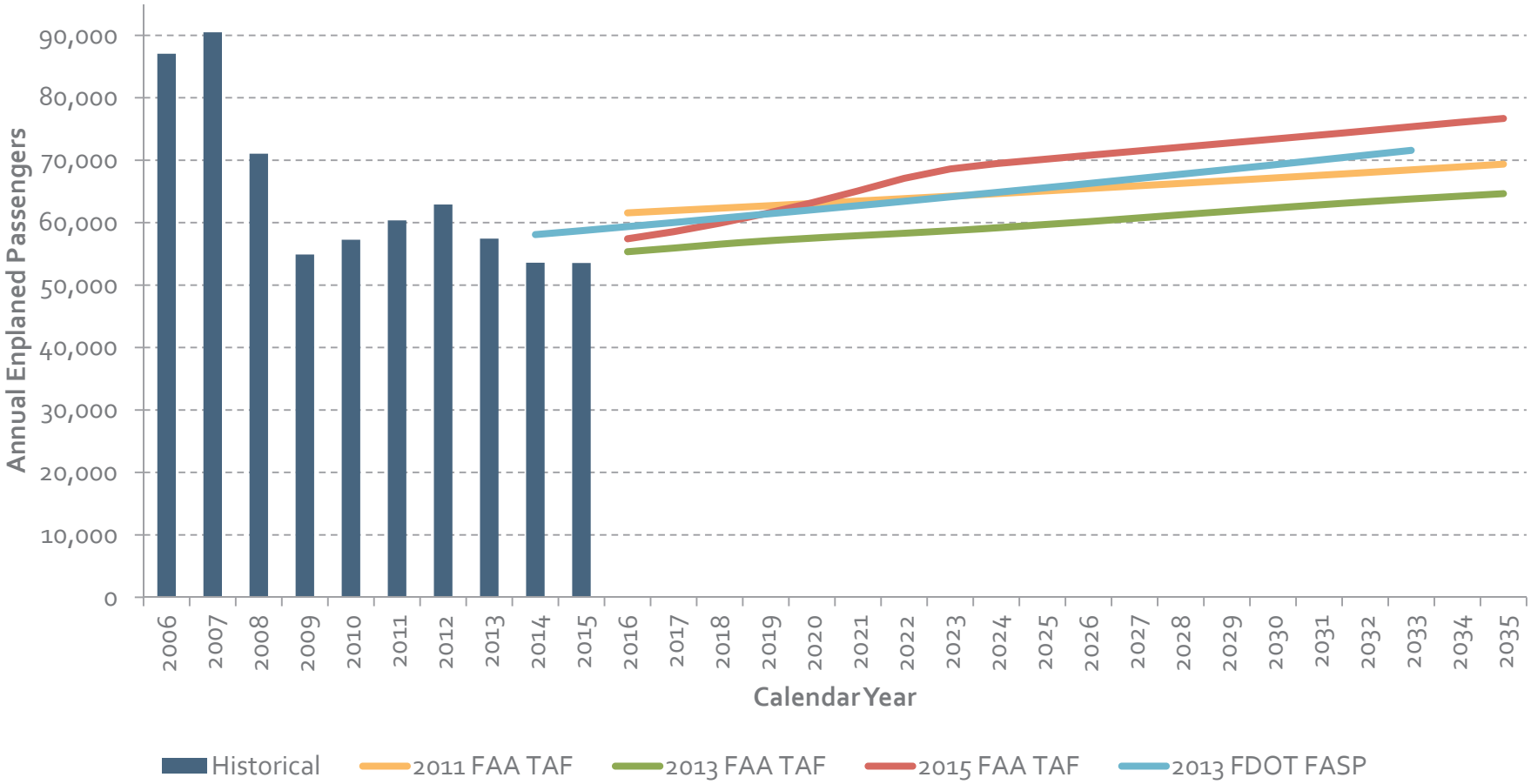
2011 and 2013 TAF Forecasts Have Similar Enplaned Passenger Forecasts to 2015 TAF



Note: FAA TAF has been adjusted from fiscal year to calendar year.

Sources: U.S. DOT T-100, March 2016; Ricondo & Associates, Inc., May 2016 (analysis).

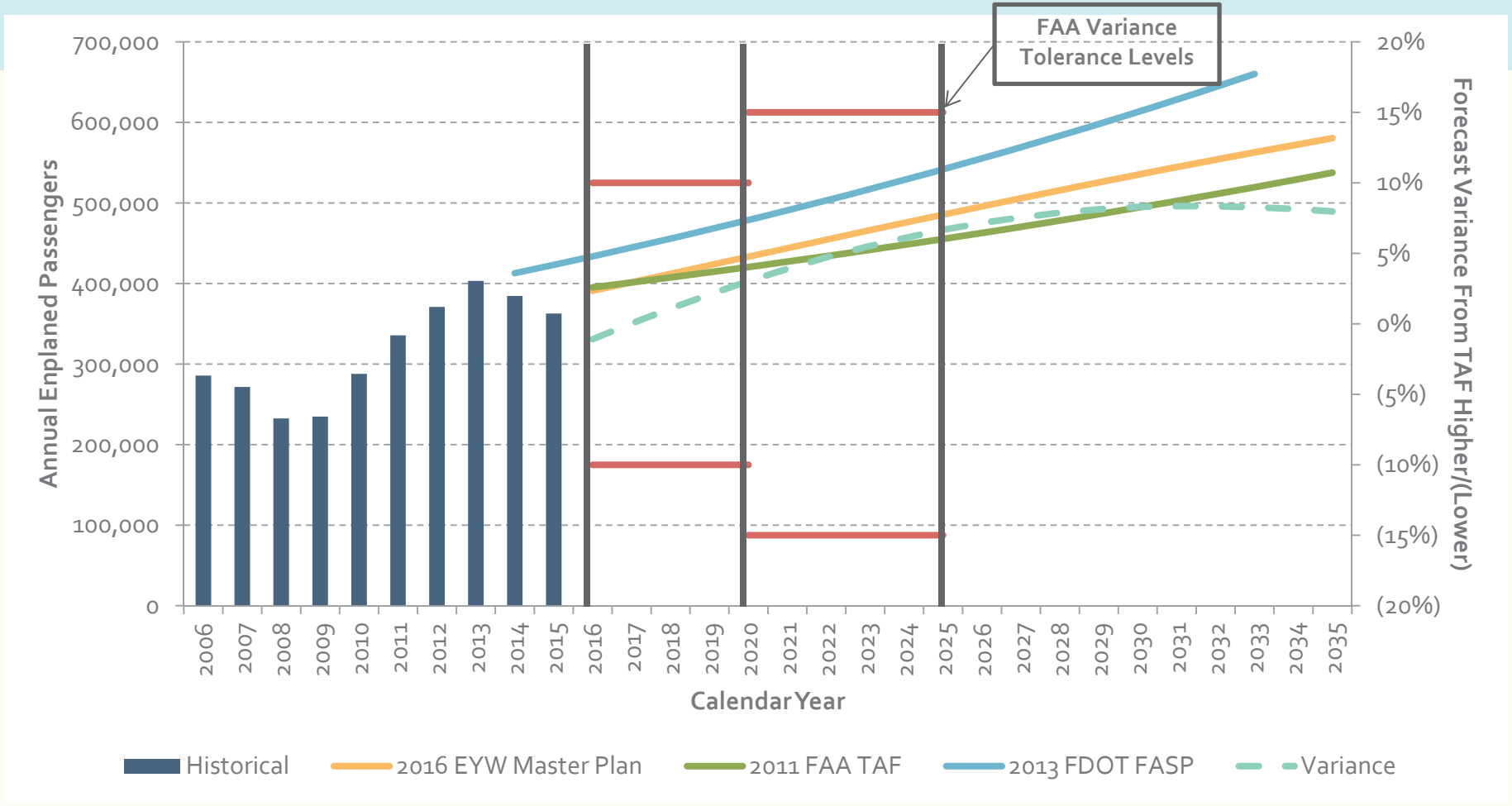
2011 and 2013 TAF Forecasts Differ in Operations Forecasts from 2015 TAF



Note: FAA TAF has been adjusted from fiscal year to calendar year.

Sources: U.S. DOT T-100, March 2016; Ricondo & Associates, Inc., May 2016 (analysis).

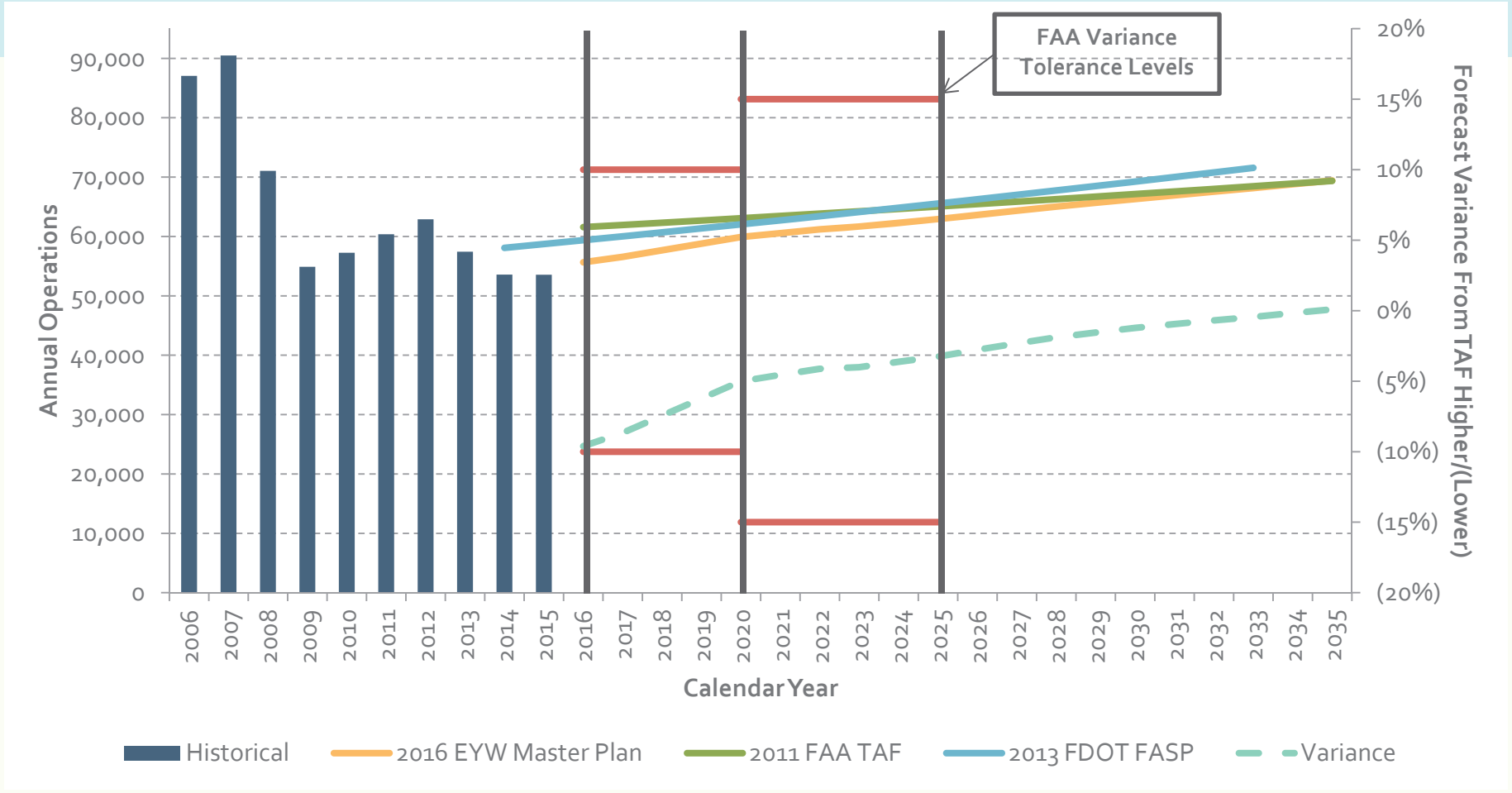
2011 TAF Enplaned Passengers Forecast Variance



Note: FAA TAF has been adjusted from fiscal year to calendar year.

Sources: U.S. DOT T-100, March 2016; Ricondo & Associates, Inc., May 2016 (analysis).

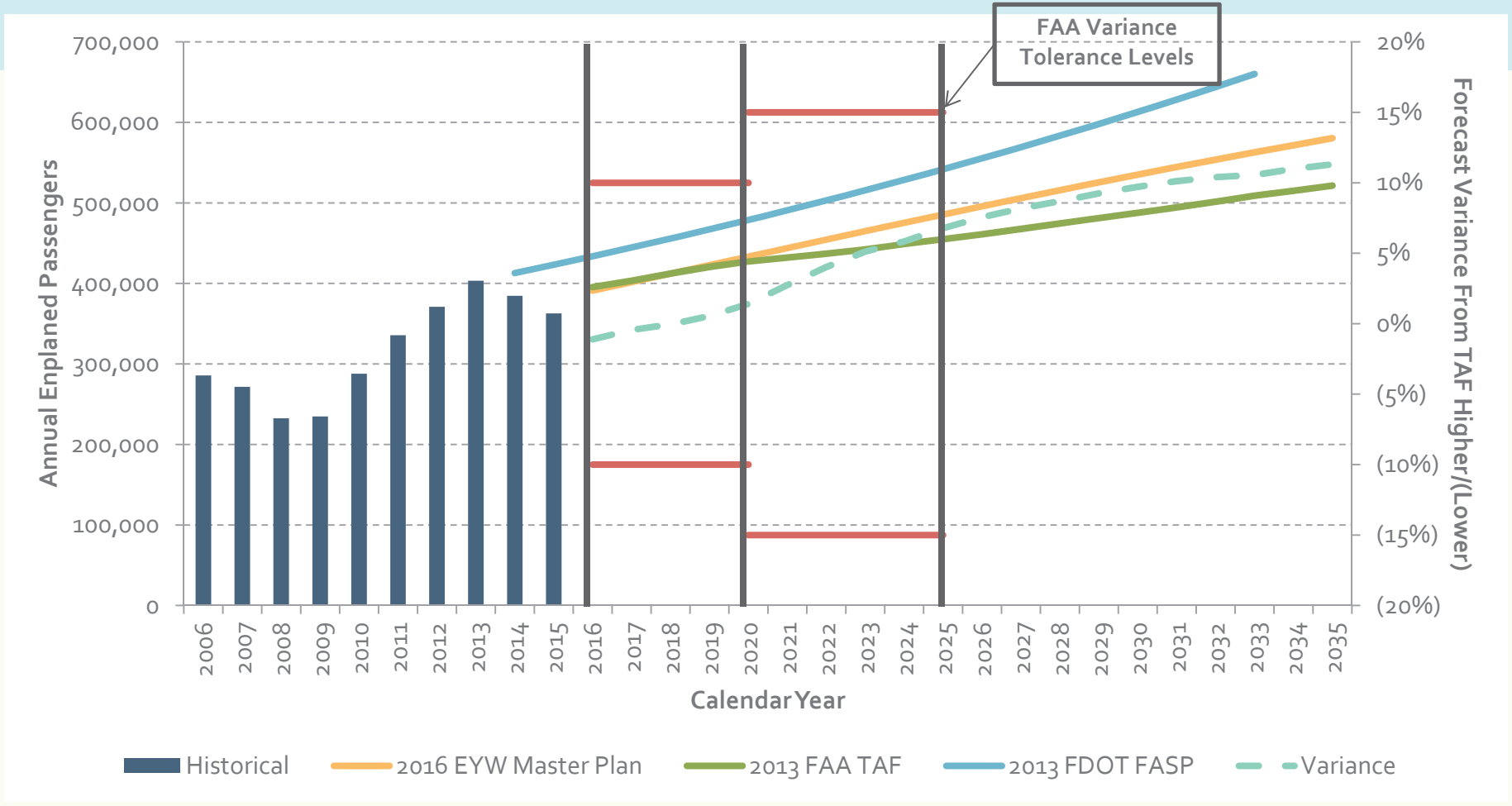
2011 TAF Operations Forecast Variance



Note: FAA TAF has been adjusted from fiscal year to calendar year.

Sources: U.S. DOT T-100, March 2016; Ricondo & Associates, Inc., May 2016 (analysis).

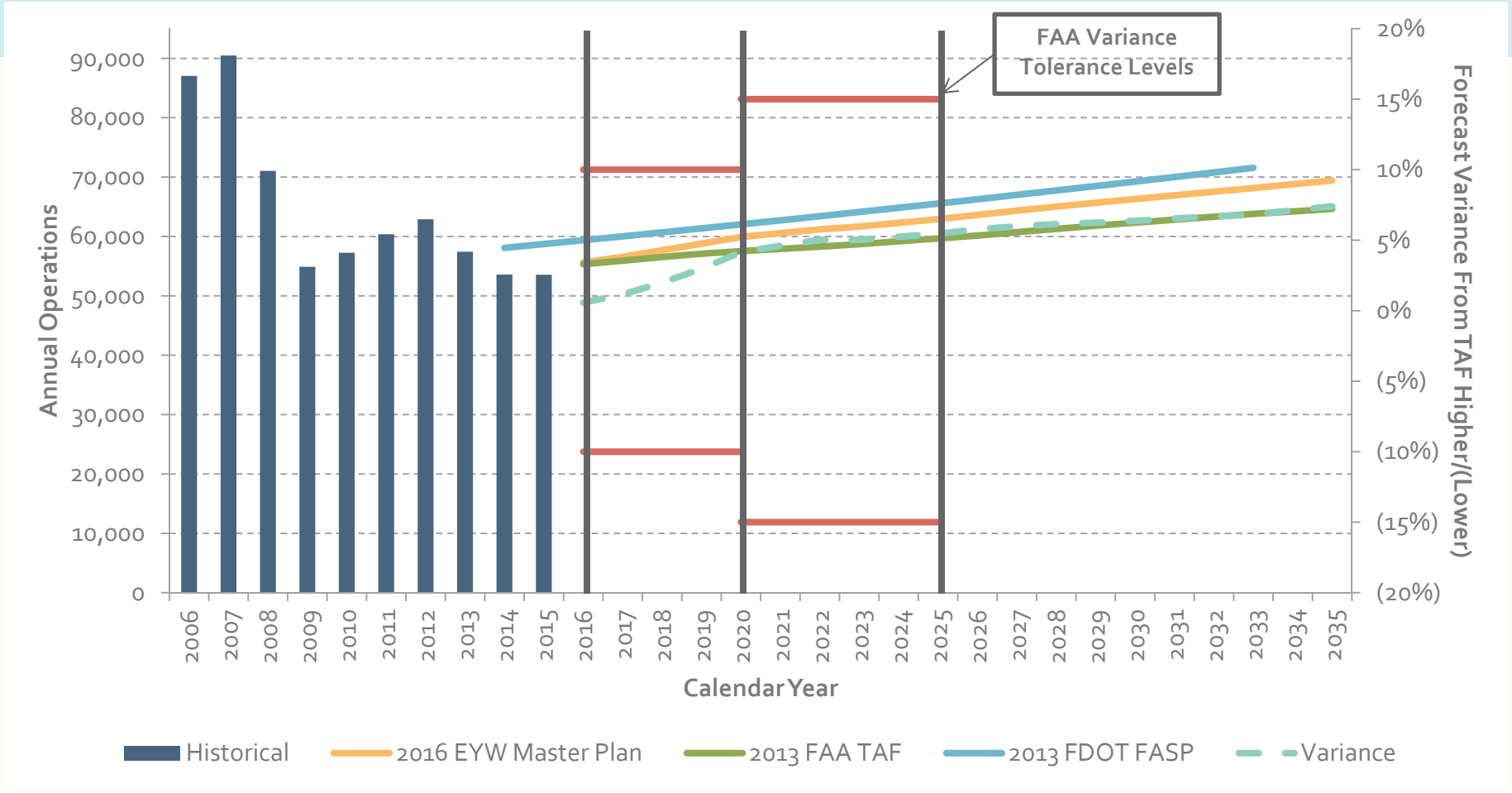
2013 TAF Enplaned Passengers Forecast Variance



Note: FAA TAF has been adjusted from fiscal year to calendar year.

Sources: U.S. DOT T-100, March 2016; Ricondo & Associates, Inc., May 2016 (analysis).

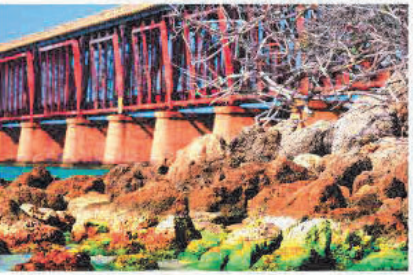
2013 TAF Operations Forecast Variance



Note: FAA TAF has been adjusted from fiscal year to calendar year.

Sources: U.S. DOT T-100, March 2016; Ricondo & Associates, Inc., May 2016 (analysis).













Key West International Airport Master Plan Study
Technical Review Committee #2

Overview

- Review progress made since TRC #1
- Design Day Flight Schedule (DDFS)
- Facility Requirements and Preliminary Alternatives
  - Airside & Aircraft Ramp
  - Passenger Terminal
  - Parking and Roadway
- General Aviation and Joint-Use Evaluation Update
- Next Steps

Master Plan Progress





Section 1

DESIGN DAY FLIGHT SCHEDULE (DDFS)

DDFS Overview

- A design day flight schedule (DDFS) includes projected activity at the Airport on a representative busy day
  - Passengers and passenger aircraft operations
  - Representative busy day: Peak Month Average Day (PMAD)
    - Peak months are measured as percentage of average months
    - Peak days are measured as a percentage of average days or weekdays in the peak month
- Identify future planning activity levels
  - 2015 (base schedule), 2020, 2025 and 2035

DDFS Overview

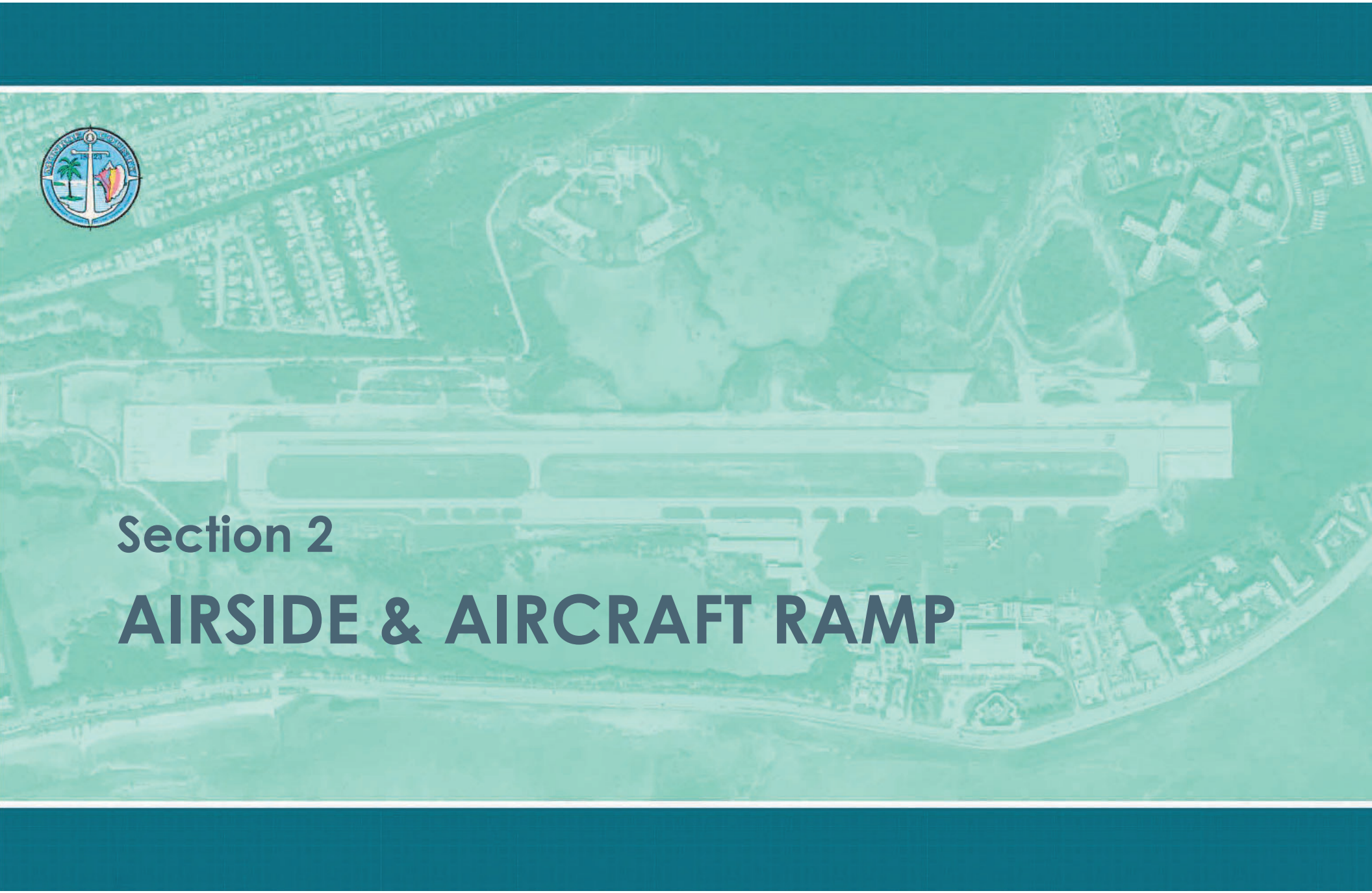
- The DDFS's are used to help determine requirements at the Airport:
  - Design day and peak hour operations:
    - Runways
    - Taxiways and taxilanes
    - Aprons
    - Gates
  - Design day O&D passengers:
    - Parking
    - Curbside
  - Peak hour O&D passengers
    - Check-in
    - Security screening
    - Holdrooms
    - Baggage claim
    - Other terminal processors

All Aircraft Operations

	Design Day			Peak Hour		
Year	Arrivals	Departures	Total Operations	Arrivals	Departures	Total Operations
2015	86	85	171	10	12	19
2020	96	94	190	10	12	20
2025	102	101	203	11	13	21
2035	115	114	229	12	14	25

Passengers (Scheduled and Unscheduled)

	Design Day			Peak Hour		
Year	Deplaned Passengers	Enplaned Passengers	Total Passengers	Deplaned Passengers	Enplaned Passengers	Total Passengers
2015	1,281	1,363	2,643	212	292	439
2020	1,529	1,363	2,892	214	301	437
2025	1,715	1,825	3,540	231	332	489
2035	2,049	2,181	4,230	278	368	544



Section 2

AIRSIDE & AIRCRAFT RAMP

Airside & Aircraft Ramp

1. Facility Requirements:

FUNCTIONAL AREA	DESCRIPTION	UNITS	EXISTING CAPACITY	REQUIREMENTS 2015	2020	2025	2035
Airside							
	Hourly Runway Capacity						
	Visual Meteorological Conditions	Arrival Operations (Per Hour)	62	19	20	21	25
	Instrument Meteorological Conditions	Arrival Operations (Per Hour)	46	9	10	11	15
	Annual Service Volume	Annual Operations		173,000	193,000	190,000	179,000
	Annual Aircraft Operations	Annual Operations		54,000	60,000	63,000	69,000
	Percent of Annual Service Volume	Percent of total Capacity		31%	31%	33%	39%
	Commercial Aircraft Positions	Gates	8 (3 Jets & 5 Turboprops)	8	5	5	5

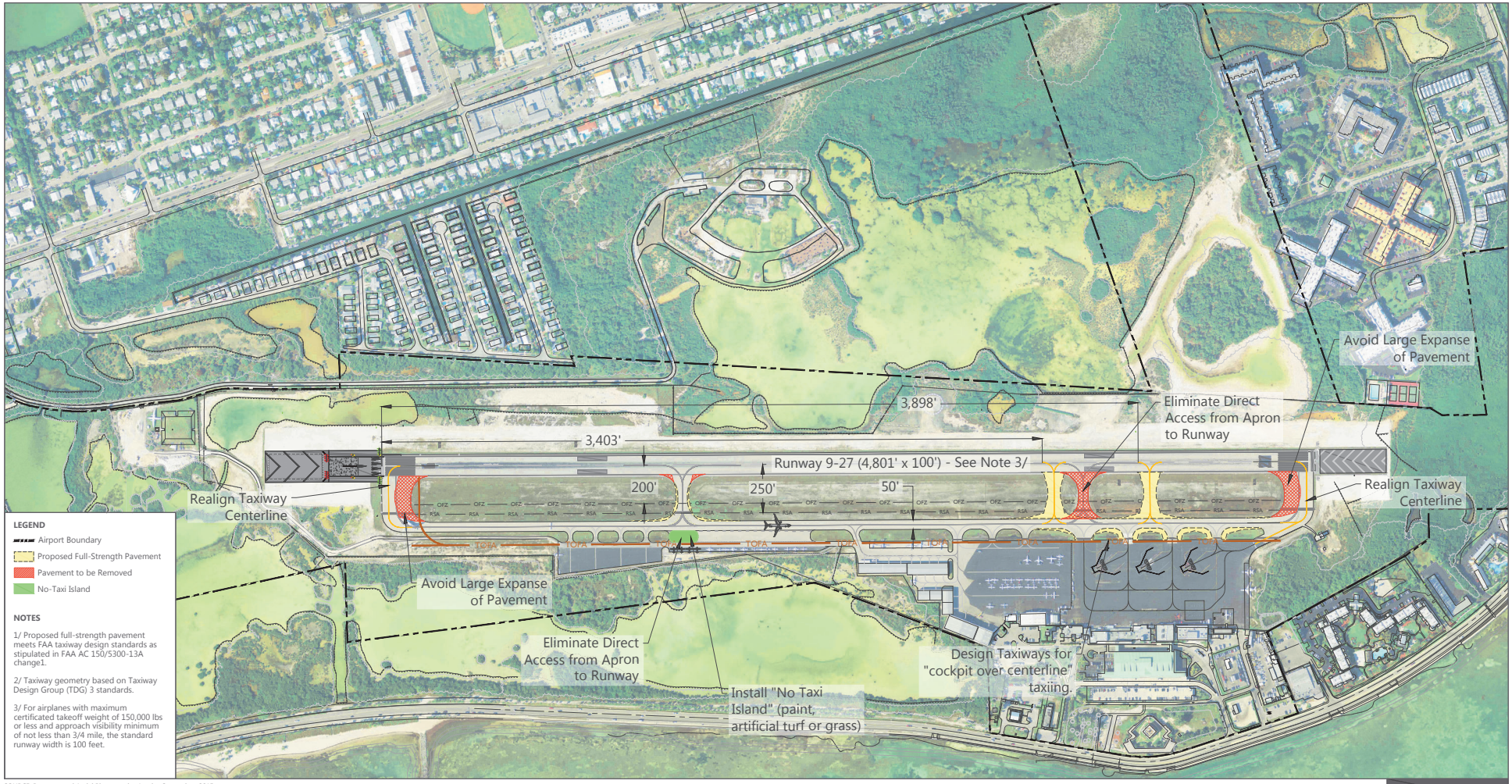
2. Alternatives Considerations:

- Airfield design criteria compliance
  - Wide expanses of pavement
  - Fillet modifications
  - Direct access to runway from ramp
  - 3-node criteria
- 2025 and 2035 gate requirements

3. Master Plan Objectives:

- Identify critical aircraft and future airfield requirements (runway length, width, etc.)
- Assess ways to maximize the existing aircraft ramp layout
- Preserve the integrity of the security identification display area (SIDA) separating the general aviation and commercial ramps
- Evaluate whether the installation of passenger boarding bridge could improve the level of service at the Airport
- Identify areas for the staging of ground support equipment (GSE)

[PRELIMINARY DRAFT- FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]



SOURCE: Basemap and Aerial Photography, Jacobs, September, 2015
PREPARED BY: Ricondo & Associates, Inc., October, 2016.

EXHIBIT 5.3-10

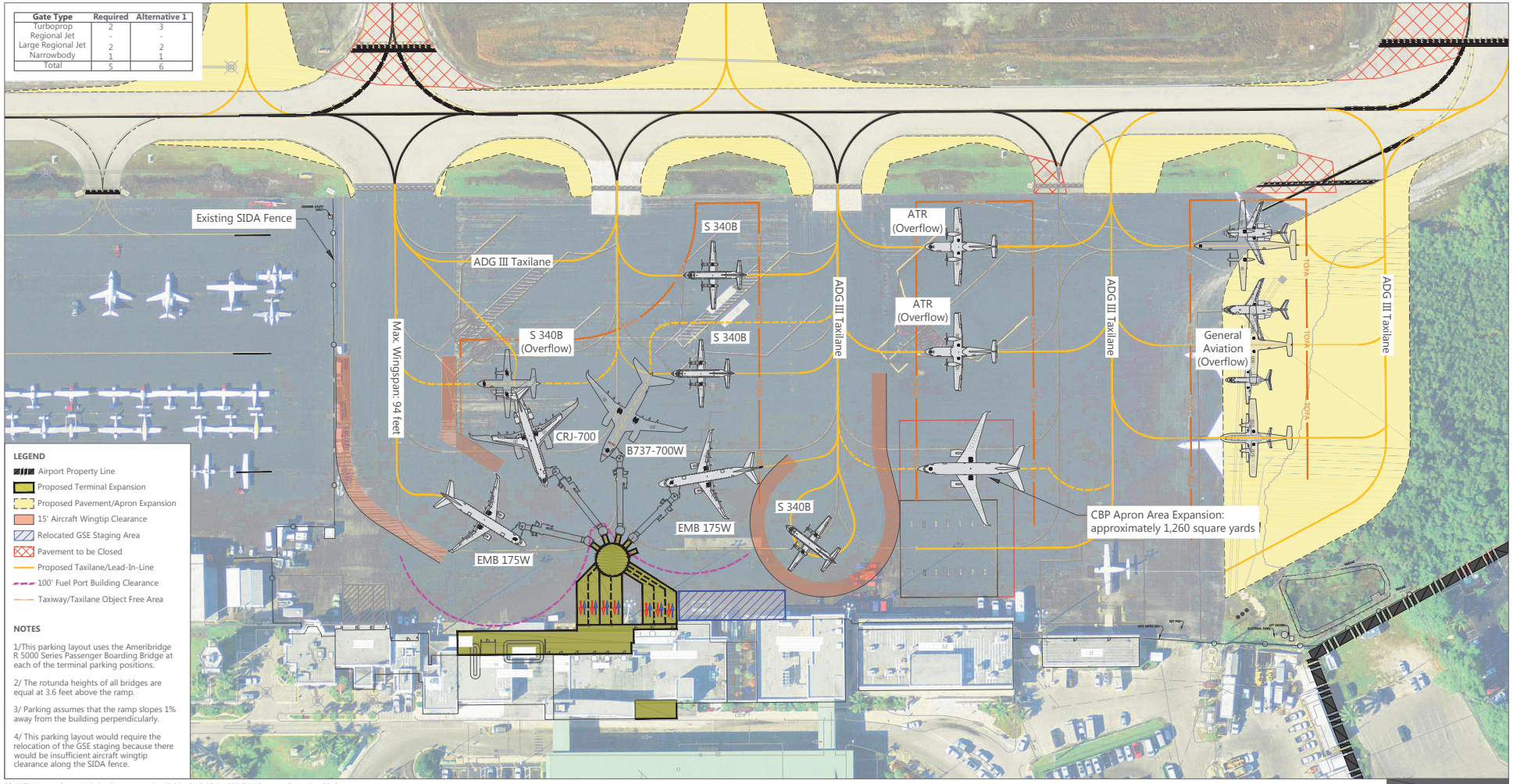
NORTH 0 500 ft

Taxiway Geometry Compliance
Proposed Improvements

Drawing: Z:\EYW\2015 Master Plan\5-Alternatives\Airfield\CAD\EYW_Masterplan_Exhibit 5.3.10_Taxiway Compliance_20161011.dwgLayout: 5.3.6 Taxiway Compliance Plotted: Oct 13, 2016, 12:42PM

[PRELIMINARY DRAFT FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]

Gate Type	Required	Alternative 1
Turboprop	2	3
Regional Jet	-	-
Large Regional Jet	2	2
Narrowbody	1	1
Total	5	6



SOURCE: Monroe County Aviation Department, *Ameribridge Radial Drive PBB EYW Concepts,* September 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

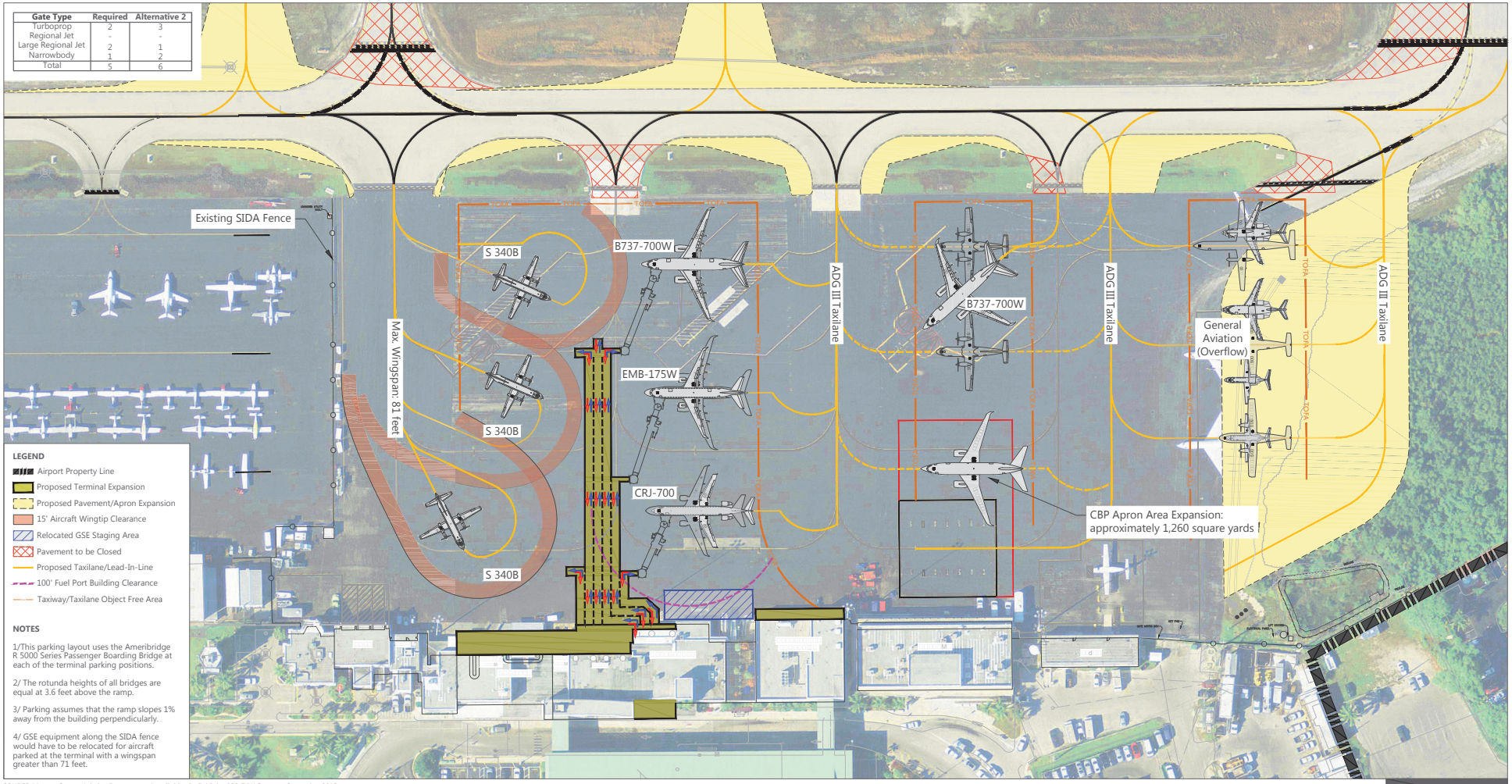
EXHIBIT 1

NORTH 0 □00 ft□

Commercial Apron
Alternative 1

Drawing: P:\Monroe County FL\Task 200 - EYW Master Plan\206 - Alternatives\CAD\Commercial Apron_Alternative 1.dwgLayout: Option 1 Plotted: Oct 31, 2016, 03:01PM

[PRELIMINARY DRAFT FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]



SOURCE: Monroe County Aviation Department, *Ameribridge Radial Drive PBB EYW Concepts,* September 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

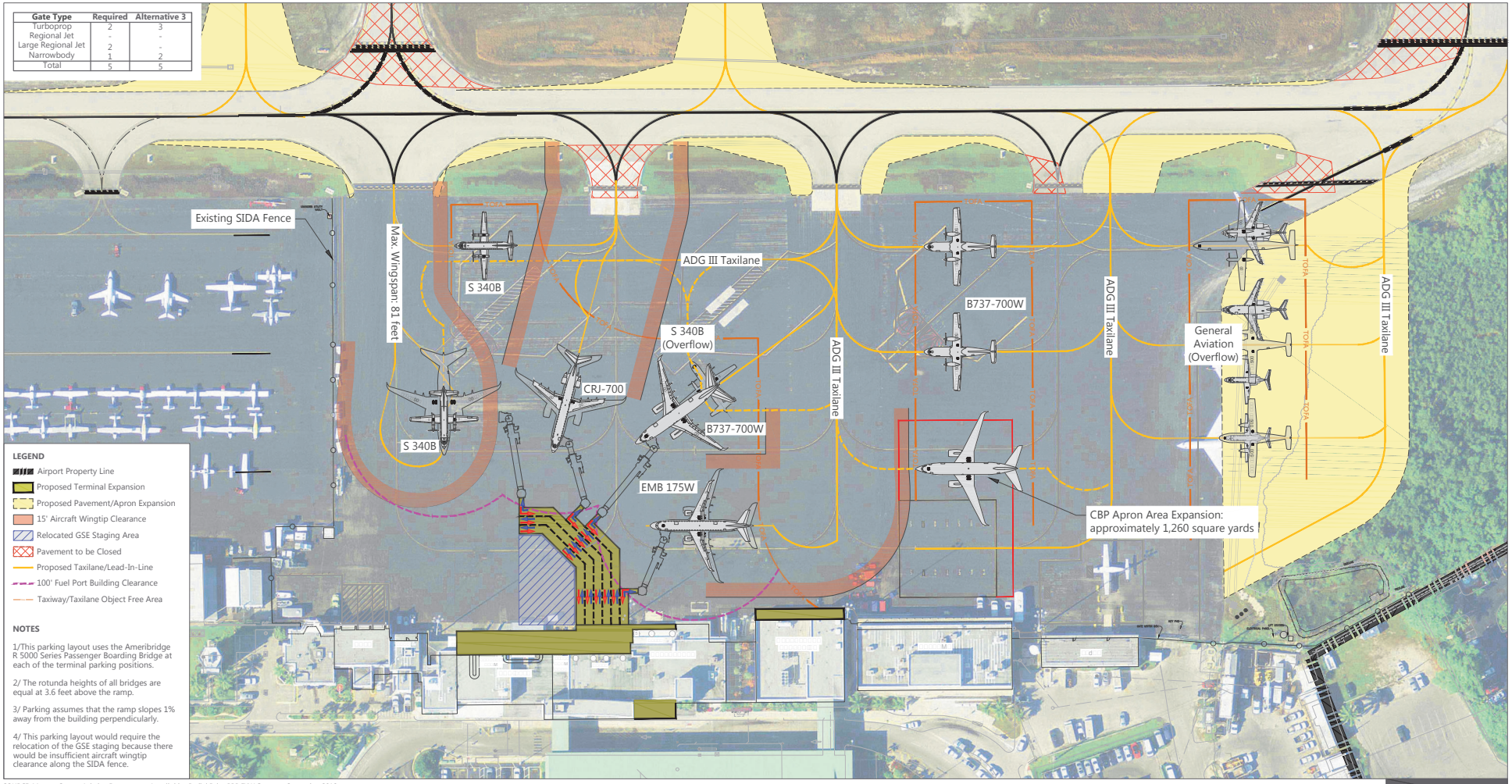
EXHIBIT 2

NORTH 0 □00 ft□

Commercial Apron
Alternative 2

Drawing: P:\Monroe County FL\Task 200 - EYW Master Plan\206 - Alternatives\CAD\Commercial Apron_Alternative 2.dwgLayout: Option 2 Plotted: Oct 31, 2016, 03:30PM

[PRELIMINARY DRAFT FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]



SOURCE: Monroe County Aviation Department, *Ameribridge Radial Drive PBB EYW Concepts,* September 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

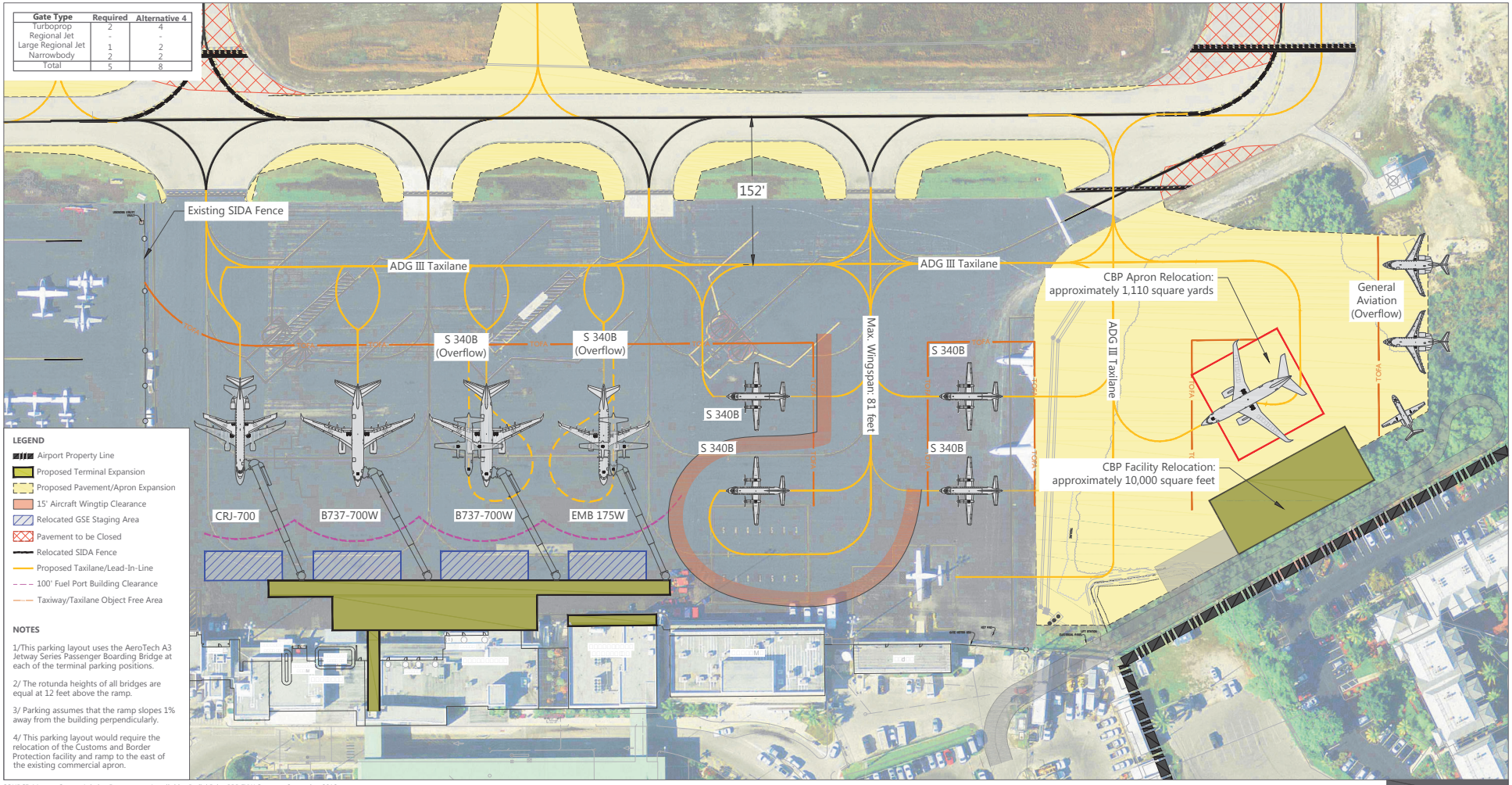
EXHIBIT 3

NORTH 0 □00 ft□

Commercial Apron
Alternative 3

Drawing: P:\Monroe County FL\Task 200 - EYW Master Plan\206 - Alternatives\CAD\Commercial Apron_Alternative 3.dwgLayout: Option 3 Plotted: Oct 31, 2016, 03:04PM

[PRELIMINARY DRAFT FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]



SOURCE: Monroe County Aviation Department, *Ameribridge Radial Drive PBB EYW Concepts*, September 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

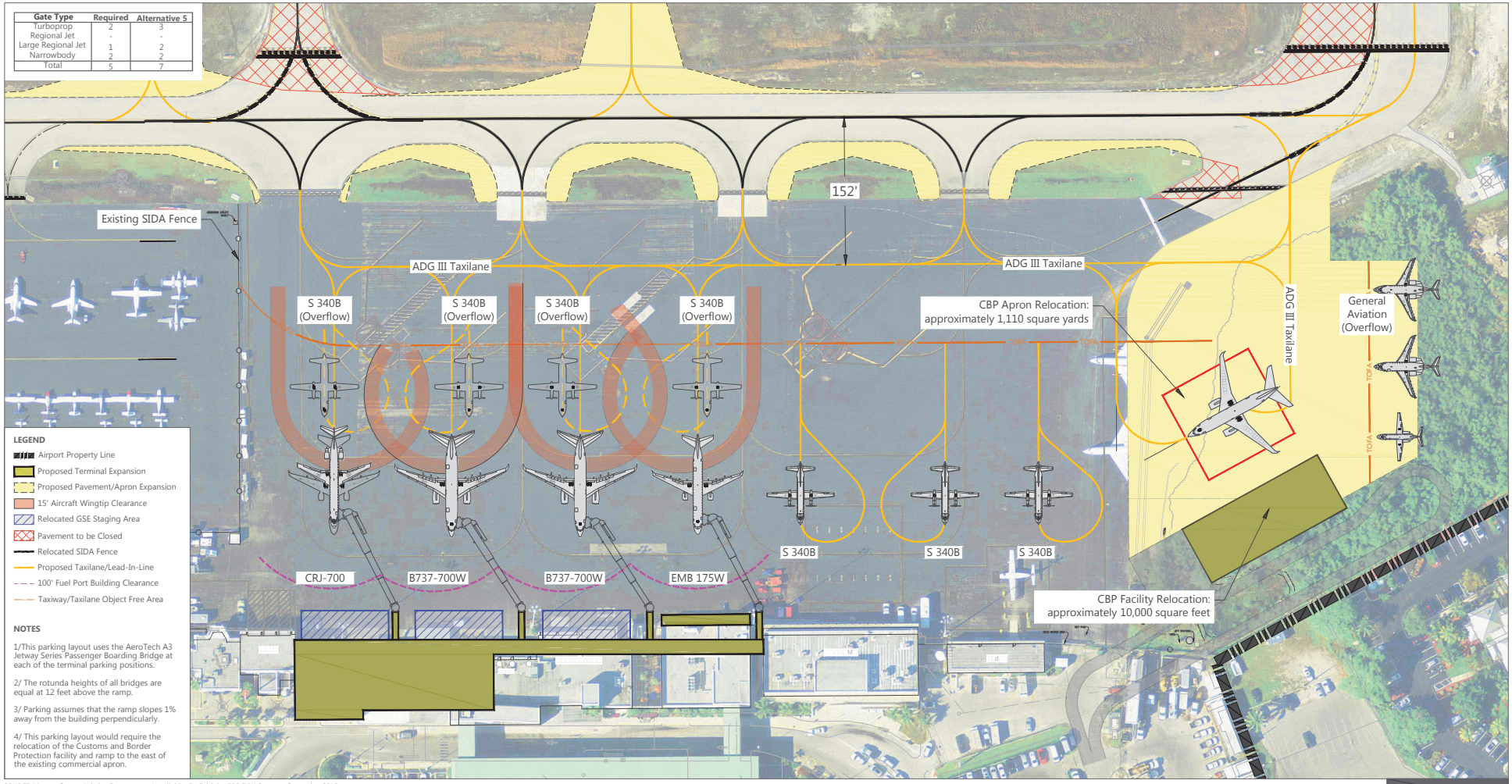
EXHIBIT 4

NORTH 0 □00 ft□

Drawing: P:\Monroe County FL\Task 200 - EYW Master Plan\206 - Alternatives\CAD\Commercial Apron_Alternative 4.dwgLayout: Option 4 Plotted: Oct 31, 2016, 04:29PM

Commercial Apron Alternative 4

[PRELIMINARY DRAFT FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]



SOURCE: Monroe County Aviation Department, *Ameribridge Radial Drive PBB EYW Concepts,* September 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

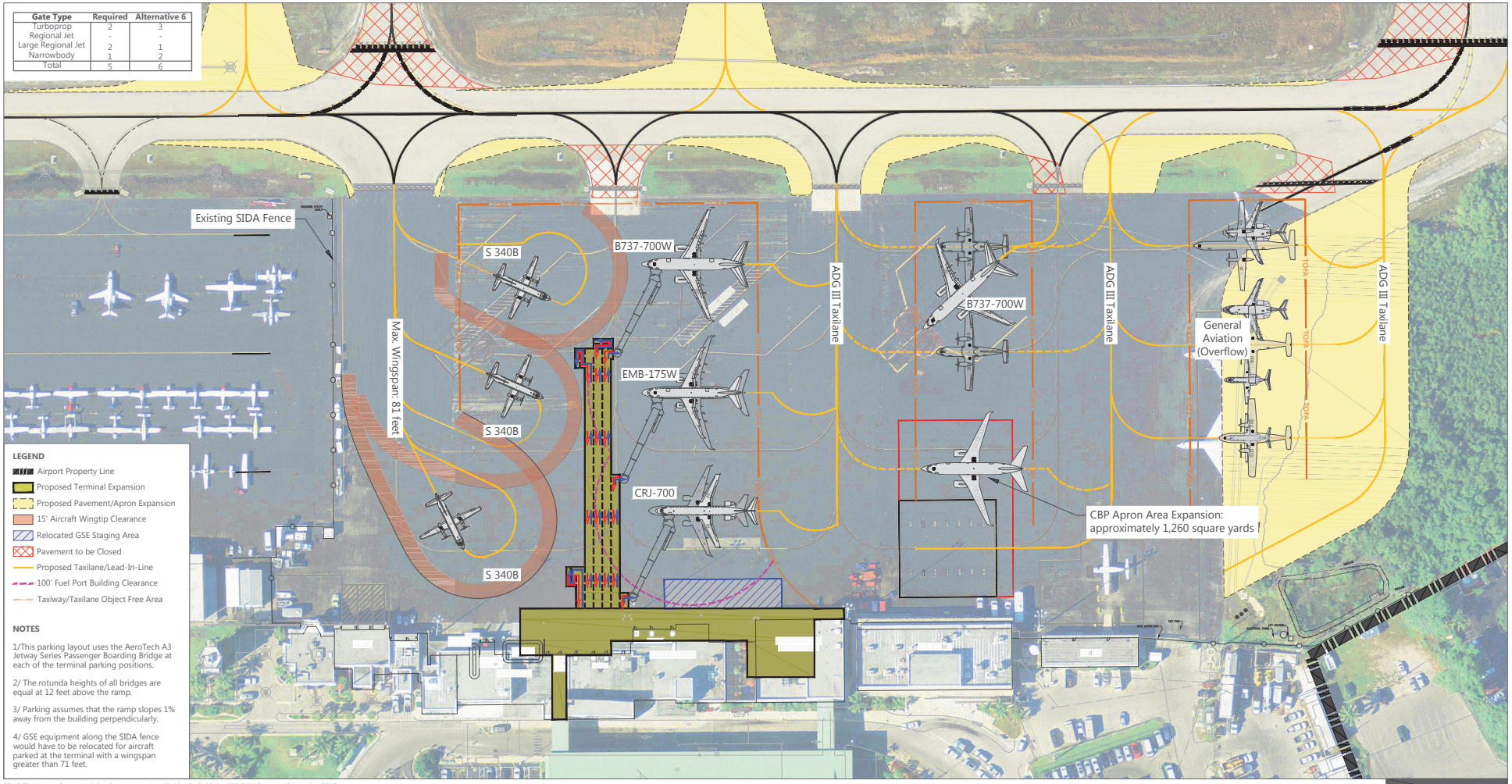
EXHIBIT 5

NORTH 0 □00 ft□

Commercial Apron
Alternative 5

Drawing: P:\Monroe County FL\Task 200 - EYW Master Plan\206 - Alternatives\CAD\Commercial Apron_Alternative 5.dwgLayout: Option 5 Plotted: Oct 31, 2016, 03:27PM

[PRELIMINARY DRAFT FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]



SOURCE: Monroe County Aviation Department, *Ameribridge Radial Drive PBB EYW Concepts,* September 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

EXHIBIT 6

NORTH 0 □00 ft□

Commercial Apron
Alternative 6

Drawing: P:\Monroe County FL\Task 200 - EYW Master Plan\206 - Alternatives\CAD\Commercial Apron_Alternative 6.dwgLayout: Option 6 Plotted: Oct 31, 2016, 04:28PM



Section 3
TERMINAL

Terminal

1. Facility Requirements:

FUNCTIONAL AREA	DESCRIPTION	UNITS	EXISTING CAPACITY	REQUIREMENTS 2015	2020	2025	2035
Terminal	Check-In						
	Kiosks	Positions	0	11	11	12	14
	Agent Positions	Positions	24	10	11	12	13
	Security Screening Checkpoint						
	Pre✓	Positions	0	0	0	1	1
	Standard Lanes	Positions	2	2	2	2	2
	Holdrooms	S.f.	4,952	5,397	5,535	5,890	6,459
	Outbound Bag Make-Up						
	Peak 10 minute flights in make-up	operations		6	7	7	8
	Cart Requirement	carts	16	12	14	18	20
	Total Outbound Make-Up Area	S.f.	7,538	5,700	6,650	8,550	9,500
	Bag Claim						
	Bag Claim Requirement	devices	2	2	2	2	2
	Retrieval Area Requirement	S.f.		2,952	3,060	3,132	3,618
	Total Bag Claim Area Requirement	S.f.	3,096	4,541	4,707	4,818	5,566

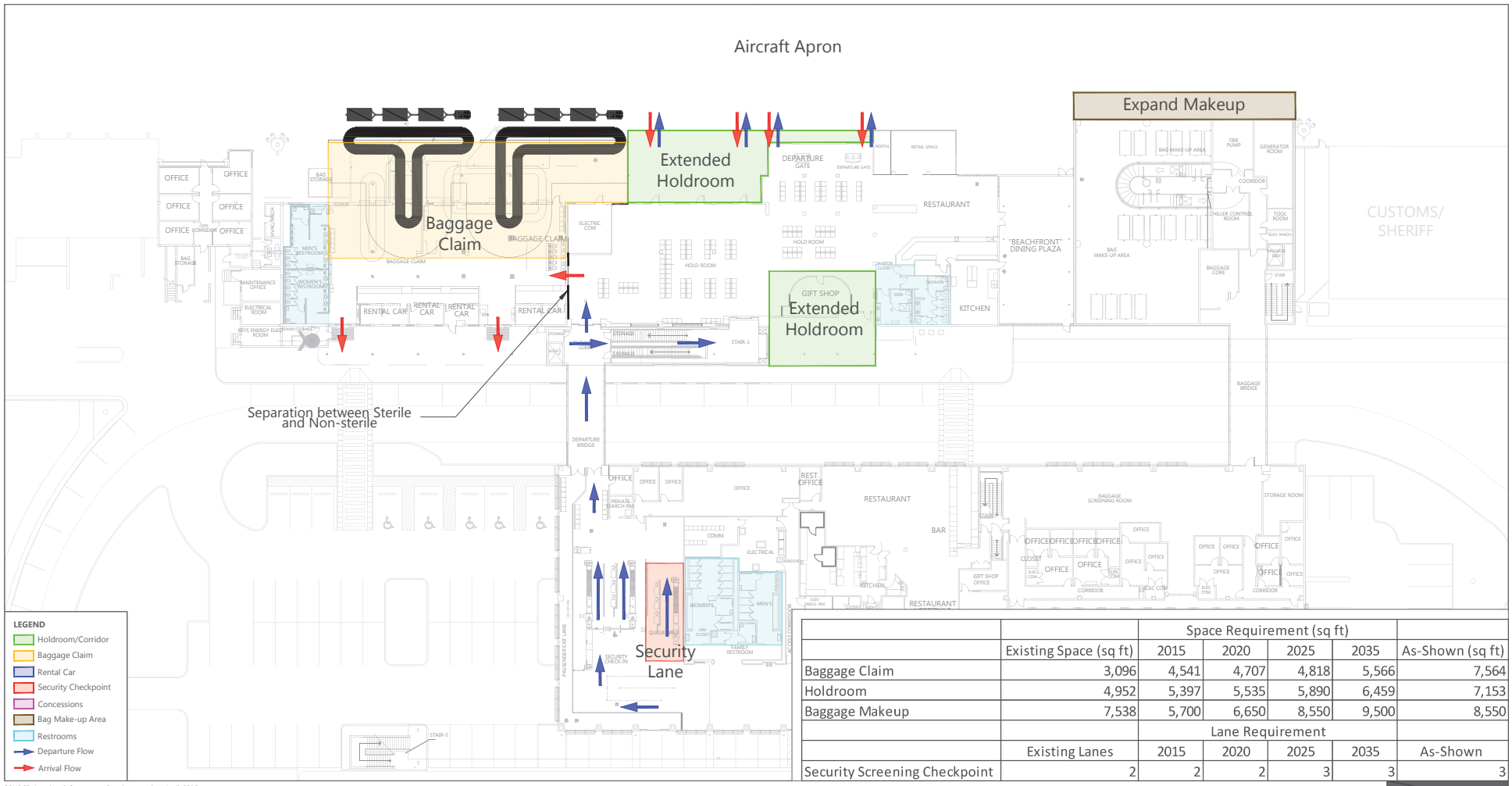
2. Alternatives Considerations:

- 3rd security checkpoint lane needed by 2025
- Holdrooms deficient today – require an additional 1,500 s.f. by 2035
- Bag claim deficient today, requires an additional 2,500 s.f. by 2035
- Outbound bag makeup requires an additional 2,000 s.f. by 2035

3. Master Plan Objectives:

- Reevaluate the capacity of the existing passenger terminal.
- Define a financially-sound expansion program that accommodates immediate, mid-term, and long-term needs focusing on improving passenger convenience and level of service
- Analyze congestion in the baggage claim area
- Establish alternative solutions that improve the handling and processing of baggage

[PRELIMINARY DRAFT-FOR DISCUSSION PURPOSES ONLY-NOT FOR DISTRIBUTION]



		Space Requirement (sq ft)				
	Existing Space (sq ft)	2015	2020	2025	2035	As-Shown (sq ft)
Baggage Claim	3,096	4,541	4,707	4,818	5,566	7,564
Holdroom	4,952	5,397	5,535	5,890	6,459	7,153
Baggage Makeup	7,538	5,700	6,650	8,550	9,500	8,550
		Lane Requirement				
	Existing Lanes	2015	2020	2025	2035	As-Shown
Security Screening Checkpoint	2	2	2	3	3	3

SOURCE: American Infrastructure Development, Inc., April, 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

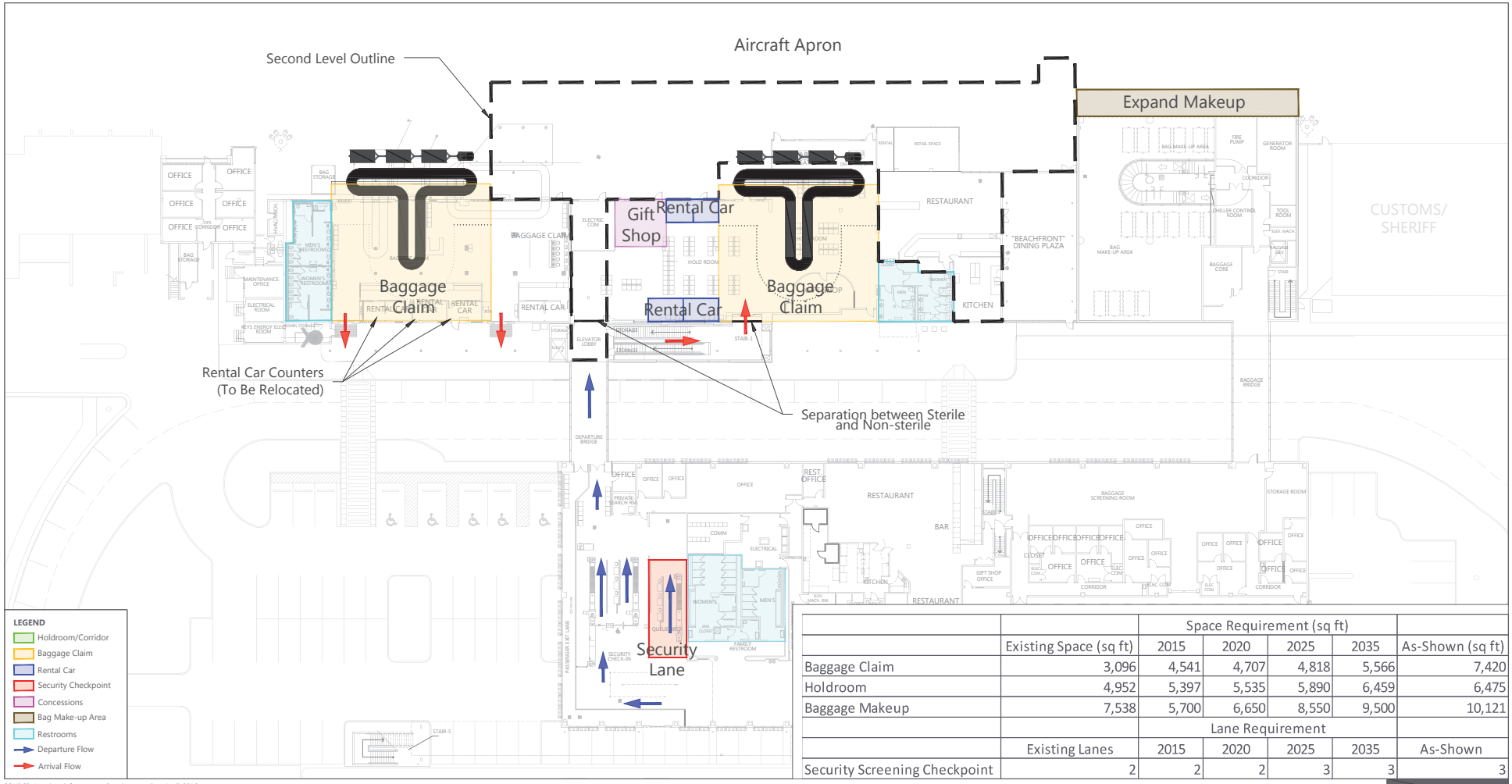
EXHIBIT T1

NORTH 0 0 ft

Terminal Alternative 1-Minimum Build Out

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\Terminal Alternatives\Terminal Alternative 1.dwg,Layout: 11X17 Plotted: Oct 31, 2016, 02:29PM

[PRELIMINARY DRAFT-FOR DISCUSSION PURPOSES ONLY-NOT FOR DISTRIBUTION]



		Space Requirement (sq ft)				
	Existing Space (sq ft)	2015	2020	2025	2035	As-Shown (sq ft)
Baggage Claim	3,096	4,541	4,707	4,818	5,566	7,420
Holdroom	4,952	5,397	5,535	5,890	6,459	6,475
Baggage Makeup	7,538	5,700	6,650	8,550	9,500	10,121
		Lane Requirement				
	Existing Lanes	2015	2020	2025	2035	As-Shown
Security Screening Checkpoint	2	2	2	3	3	3

SOURCE: American Infrastructure Development, Inc., April, 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

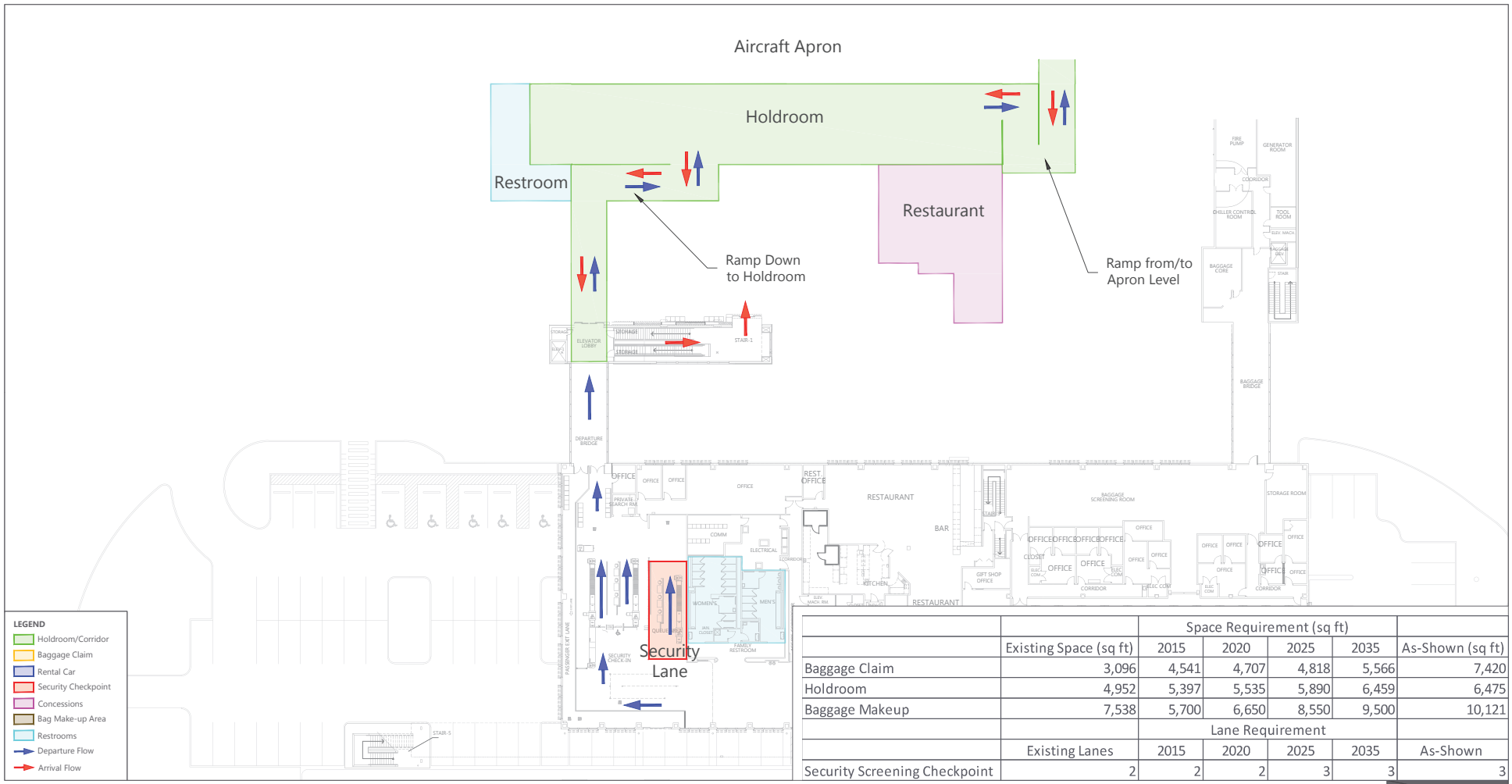
EXHIBIT T2a

NORTH 0 0 ft

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\Terminal Alternatives\Terminal Alternative 2a-Lower.dwg Layout: 11X17 Plotted: Oct 31, 2016, 02:34PM

Terminal Alternative 2-Holdroom Over Apron
First Floor

[PRELIMINARY DRAFT-FOR DISCUSSION PURPOSES ONLY-NOT FOR DISTRIBUTION]



		Space Requirement (sq ft)				
	Existing Space (sq ft)	2015	2020	2025	2035	As-Shown (sq ft)
Baggage Claim	3,096	4,541	4,707	4,818	5,566	7,420
Holdroom	4,952	5,397	5,535	5,890	6,459	6,475
Baggage Makeup	7,538	5,700	6,650	8,550	9,500	10,121
		Lane Requirement				
	Existing Lanes	2015	2020	2025	2035	As-Shown
Security Screening Checkpoint	2	2	2	3	3	3

SOURCE: American Infrastructure Development, Inc., April, 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

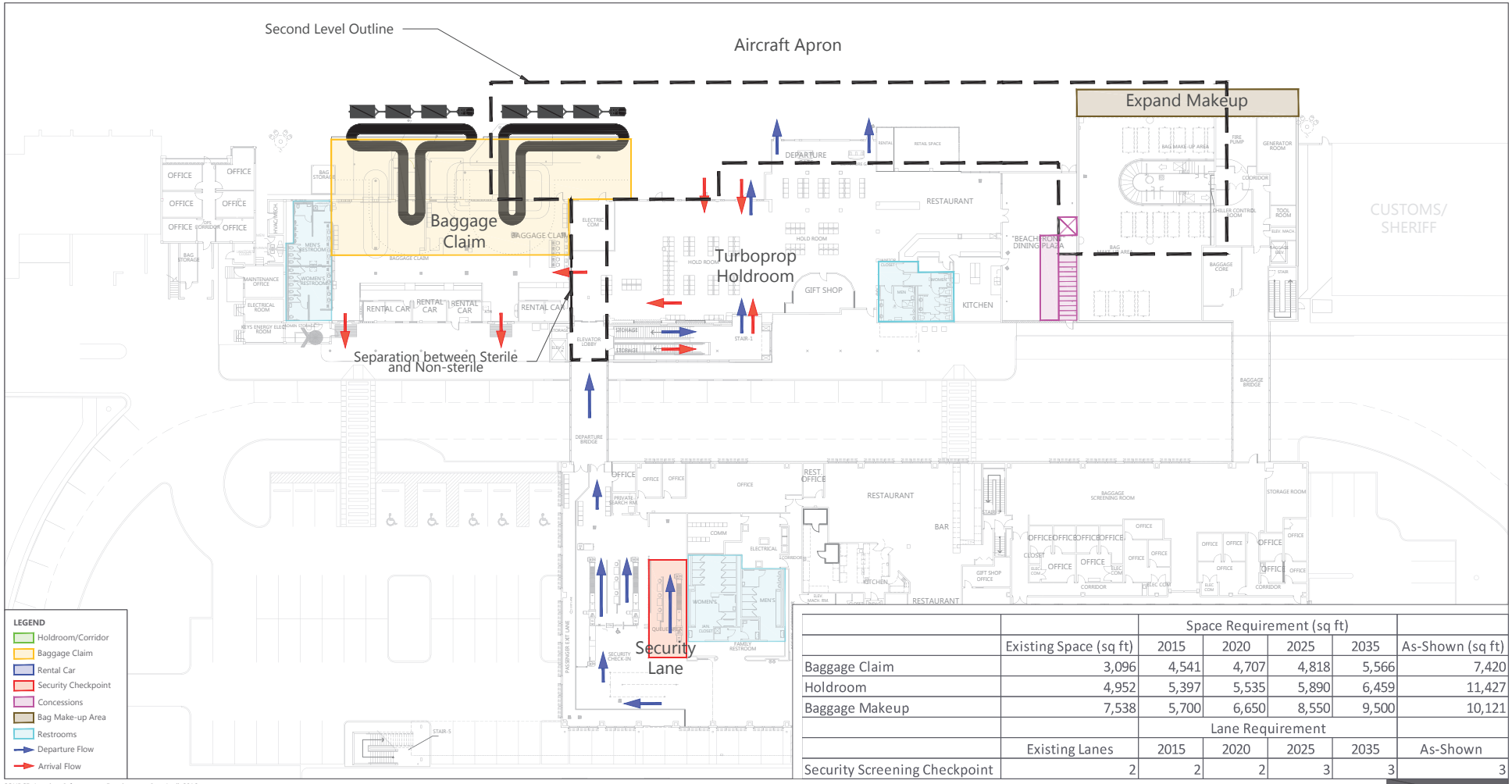
EXHIBIT T2b

NORTH 0 0 ft

Terminal Alternative 2-Holdroom Over Apron
Second Floor

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\Terminal Alternatives\Terminal Alternative 2b-Upper.dwgLayout: 11X17 Plotted: Oct 31, 2016, 02:41PM

[PRELIMINARY DRAFT-FOR DISCUSSION PURPOSES ONLY-NOT FOR DISTRIBUTION]



		Space Requirement (sq ft)				
	Existing Space (sq ft)	2015	2020	2025	2035	As-Shown (sq ft)
Baggage Claim	3,096	4,541	4,707	4,818	5,566	7,420
Holdroom	4,952	5,397	5,535	5,890	6,459	11,427
Baggage Makeup	7,538	5,700	6,650	8,550	9,500	10,121
		Lane Requirement				
	Existing Lanes	2015	2020	2025	2035	As-Shown
Security Screening Checkpoint	2	2	2	3	3	3

SOURCE: American Infrastructure Development, Inc., April, 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

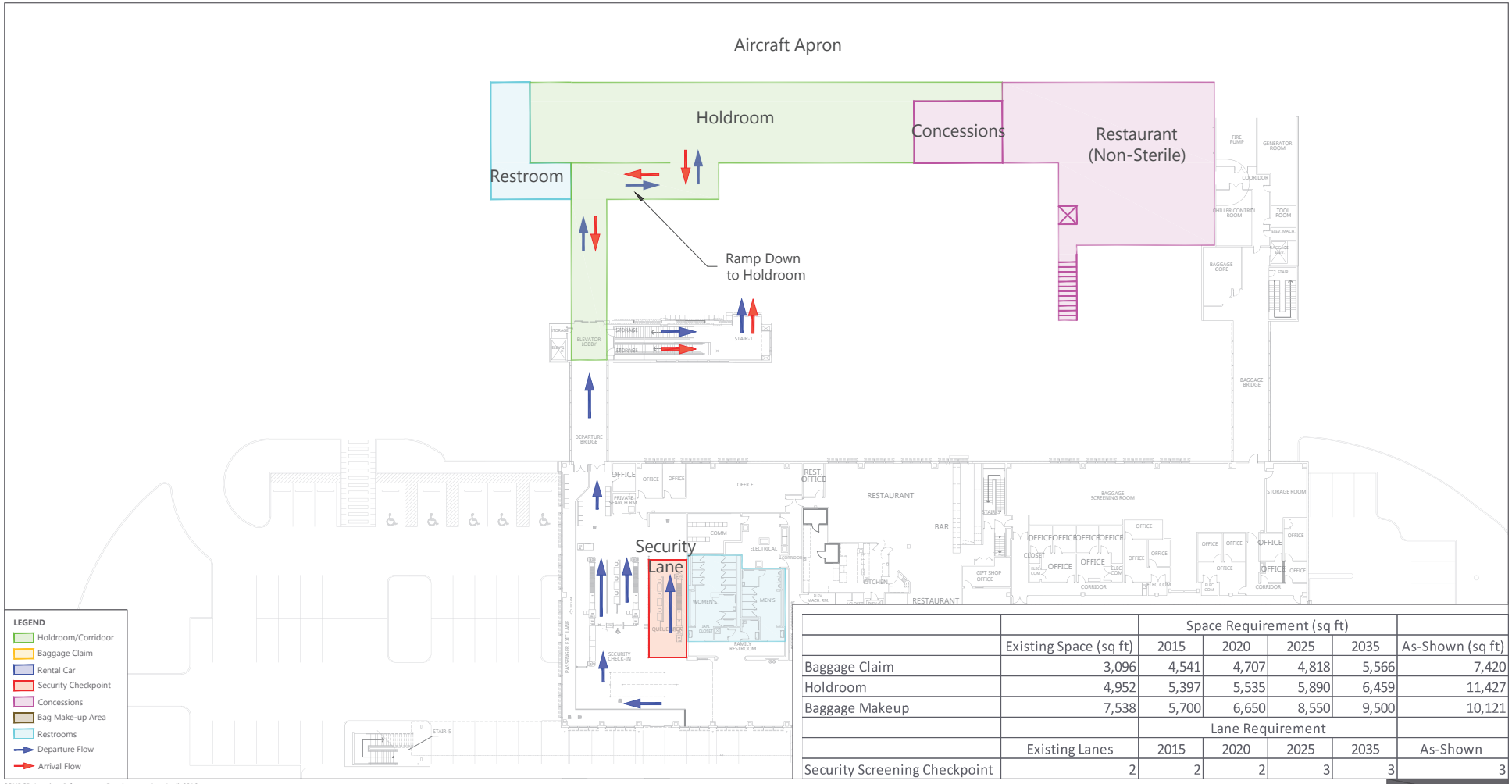
EXHIBIT T3a

NORTH 0 0 ft

Terminal Alternative 3-Split Holdroom
First Floor

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\Terminal Alternatives\Terminal Alternative 3a-Lower.dwg Layout: 11X17 Plotted: Oct 31, 2016, 02:50PM

[PRELIMINARY DRAFT-FOR DISCUSSION PURPOSES ONLY-NOT FOR DISTRIBUTION]



		Space Requirement (sq ft)				
	Existing Space (sq ft)	2015	2020	2025	2035	As-Shown (sq ft)
Baggage Claim	3,096	4,541	4,707	4,818	5,566	7,420
Holdroom	4,952	5,397	5,535	5,890	6,459	11,427
Baggage Makeup	7,538	5,700	6,650	8,550	9,500	10,121
		Lane Requirement				
	Existing Lanes	2015	2020	2025	2035	As-Shown
Security Screening Checkpoint	2	2	2	3	3	3

SOURCE: American Infrastructure Development, Inc., April, 2016.
PREPARED BY: Ricondo & Associates, Inc., October 2016.

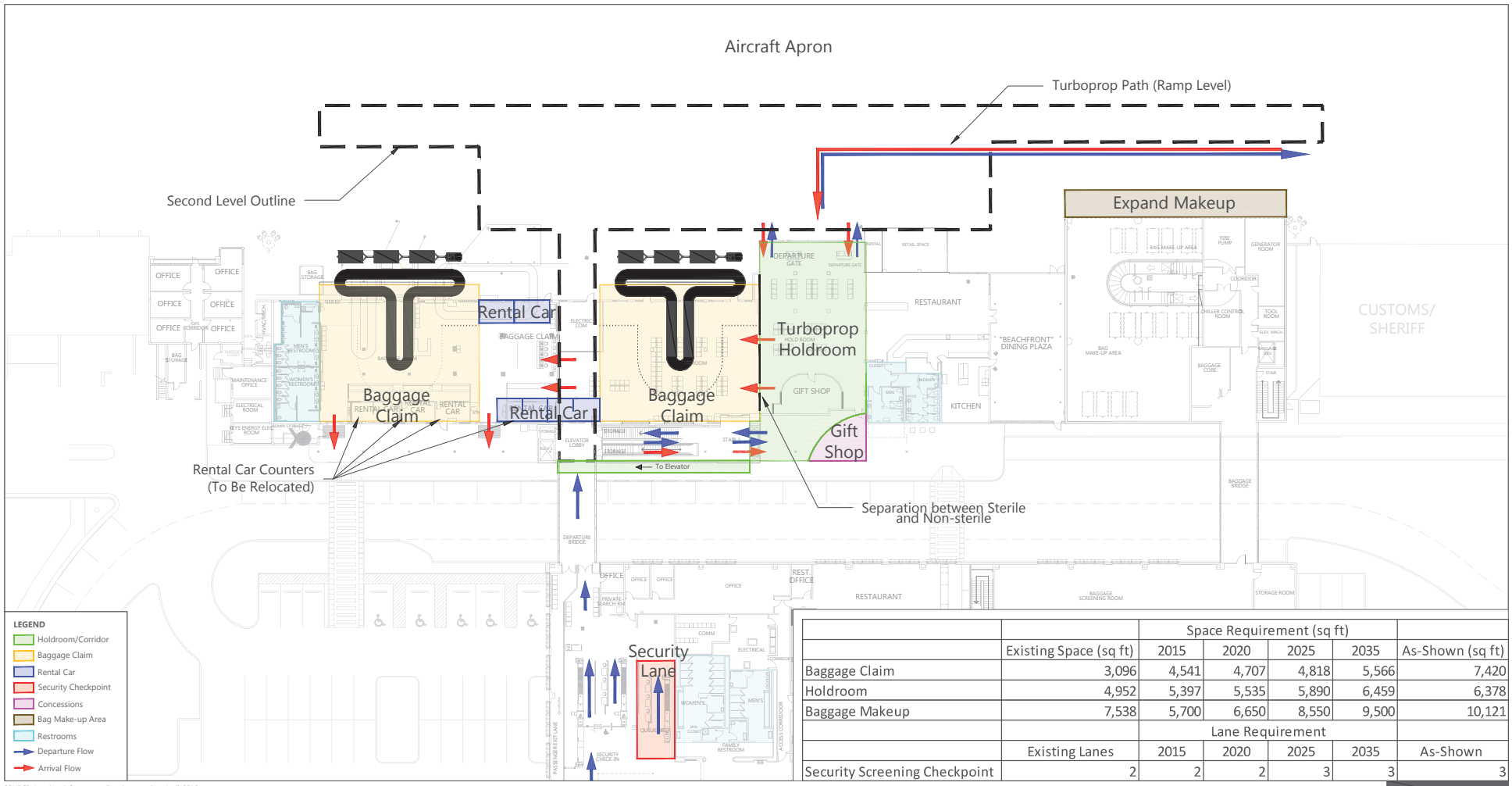
EXHIBIT T3b

NORTH 0 0 ft

Terminal Alternative 3b-Split Holdroom
Second Floor

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\Terminal Alternatives\Terminal Alternative 3b-Upper.dwgLayout: 11X17 Plotted: Oct 31, 2016, 02:53PM

[PRELIMINARY DRAFT-FOR DISCUSSION PURPOSES ONLY-NOT FOR DISTRIBUTION]



		Space Requirement (sq ft)				
	Existing Space (sq ft)	2015	2020	2025	2035	As-Shown (sq ft)
Baggage Claim	3,096	4,541	4,707	4,818	5,566	7,420
Holdroom	4,952	5,397	5,535	5,890	6,459	6,378
Baggage Makeup	7,538	5,700	6,650	8,550	9,500	10,121
		Lane Requirement				
	Existing Lanes	2015	2020	2025	2035	As-Shown
Security Screening Checkpoint	2	2	2	3	3	3

SOURCE: American Infrastructure Development, Inc., April, 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

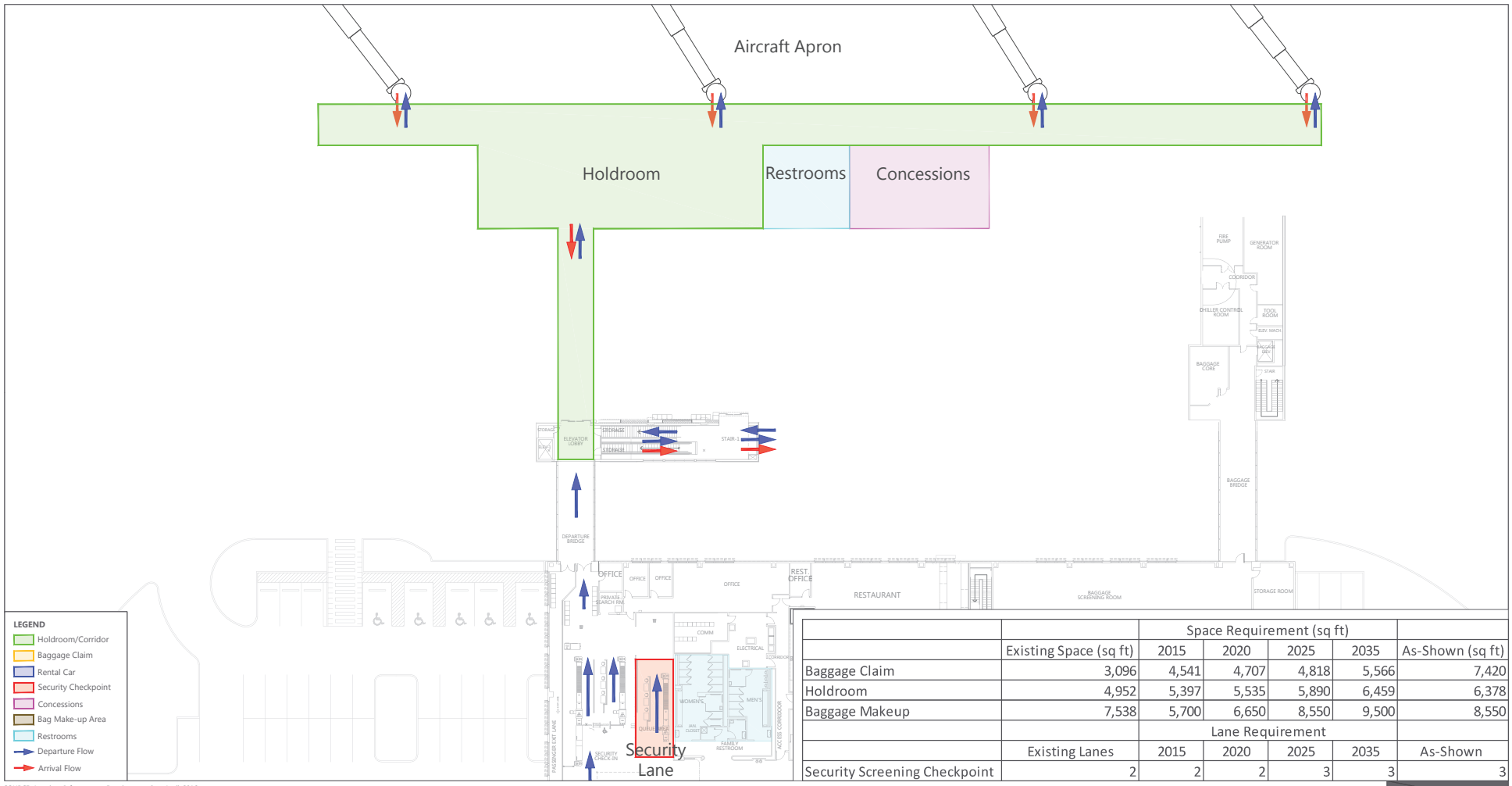
EXHIBIT T4a

NORTH 0 0 ft

Terminal Alternative 4-Second Level Holdroom over Apron
First Floor

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\Terminal Alternatives\Terminal Alternative 4a-Lower.dwg,Layout: 11X17 Plotted: Oct 31, 2016, 03:05PM

[PRELIMINARY DRAFT-FOR DISCUSSION PURPOSES ONLY-NOT FOR DISTRIBUTION]



		Space Requirement (sq ft)				
	Existing Space (sq ft)	2015	2020	2025	2035	As-Shown (sq ft)
Baggage Claim	3,096	4,541	4,707	4,818	5,566	7,420
Holdroom	4,952	5,397	5,535	5,890	6,459	6,378
Baggage Makeup	7,538	5,700	6,650	8,550	9,500	8,550
		Lane Requirement				
	Existing Lanes	2015	2020	2025	2035	As-Shown
Security Screening Checkpoint	2	2	2	3	3	3

SOURCE: American Infrastructure Development, Inc., April, 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

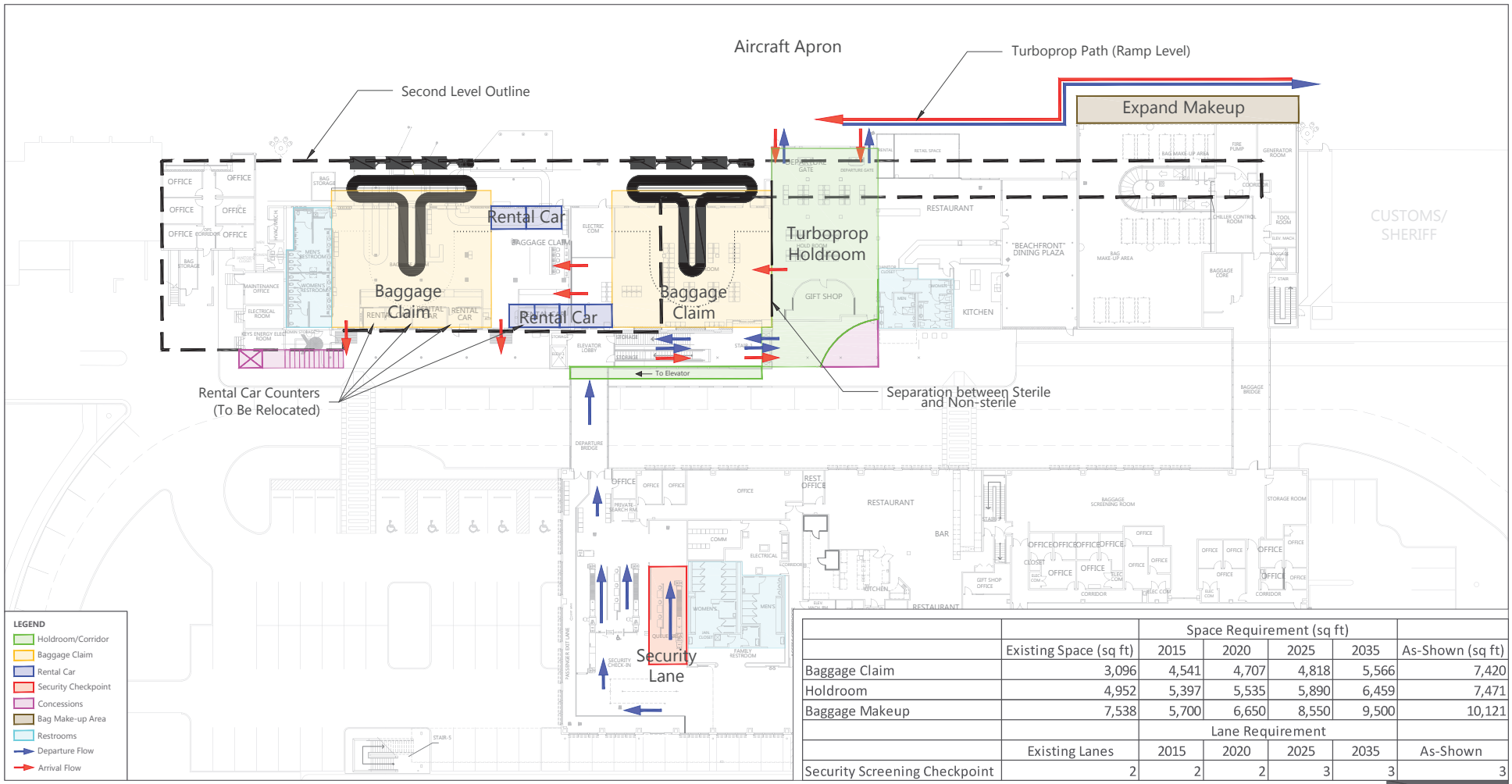
EXHIBIT T4b

NORTH 0 0 ft

Terminal Alternative 4-Second Level Holdroom over Apron
Second Floor

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\Terminal Alternatives\Terminal Alternative 4b-Upper.dwgLayout: 11X17 Plotted: Oct 31, 2016, 03:06PM

[PRELIMINARY DRAFT-FOR DISCUSSION PURPOSES ONLY-NOT FOR DISTRIBUTION]



		Space Requirement (sq ft)				
	Existing Space (sq ft)	2015	2020	2025	2035	As-Shown (sq ft)
Baggage Claim	3,096	4,541	4,707	4,818	5,566	7,420
Holdroom	4,952	5,397	5,535	5,890	6,459	7,471
Baggage Makeup	7,538	5,700	6,650	8,550	9,500	10,121
		Lane Requirement				
	Existing Lanes	2015	2020	2025	2035	As-Shown
Security Screening Checkpoint	2	2	2	3	3	3

SOURCE: American Infrastructure Development, Inc., April, 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

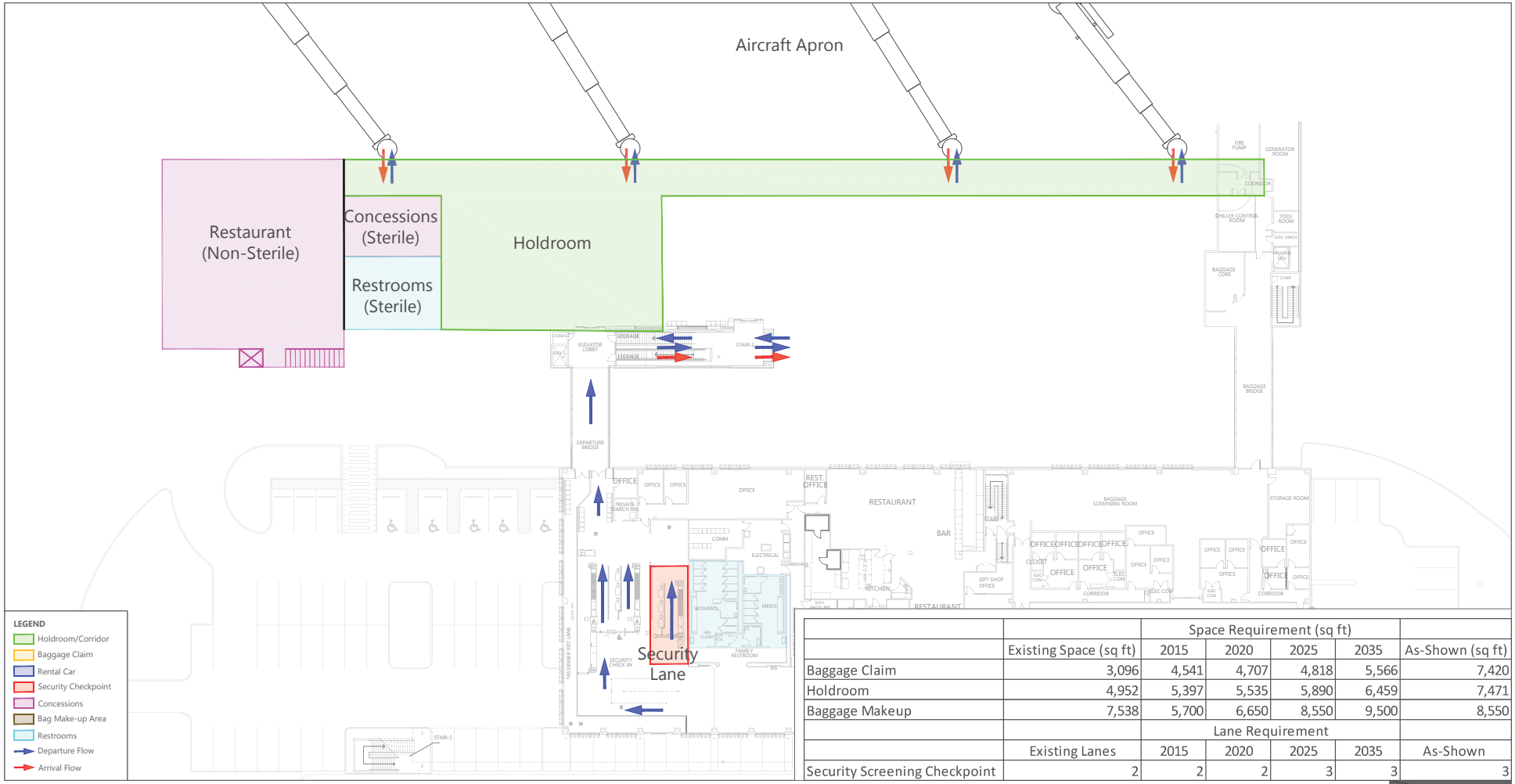
EXHIBIT T5a

NORTH 0 0 ft

Terminal Alternative 5-Second Level Holdroom over Terminal First Floor

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\Terminal Alternatives\Terminal Alternative 5a-Lower.dwg Layout: 11X17 Plotted: Oct 31, 2016, 03:14PM

[PRELIMINARY DRAFT-FOR DISCUSSION PURPOSES ONLY-NOT FOR DISTRIBUTION]



		Space Requirement (sq ft)				
	Existing Space (sq ft)	2015	2020	2025	2035	As-Shown (sq ft)
Baggage Claim	3,096	4,541	4,707	4,818	5,566	7,420
Holdroom	4,952	5,397	5,535	5,890	6,459	7,471
Baggage Makeup	7,538	5,700	6,650	8,550	9,500	8,550
		Lane Requirement				
	Existing Lanes	2015	2020	2025	2035	As-Shown
Security Screening Checkpoint	2	2	2	3	3	3

SOURCE: American Infrastructure Development, Inc., April, 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

EXHIBIT T5b

NORTH 0 0 ft

Terminal Alternative 5-Second Level Holdroom over Terminal Second Floor

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\Terminal Alternatives\Terminal Alternative 5b-Upper.dwg Layout: 11X17 Plotted: Oct 31, 2016, 03:16PM



Section 4

PARKING AND ROADWAY

Parking and Roadway

1. Facility Requirements:

FUNCTIONAL AREA	DESCRIPTION	UNITS	EXISTING CAPACITY	REQUIREMENTS 2015	2020	2025	2035
Landside	Terminal Curbside						
	Departures Curb	Linear Feet	375	300	325	325	375
	Arrivals Curb						
	Private Vehicles (POV)	Linear Feet	66	175	225	225	250
	Taxi (includes staging area)	Linear Feet	160	125	150	150	200
	Public Bus (Key West Transit)	Linear Feet	40	40	40	40	40
	Commercial Vehicles	Linear Feet	177	140	180	180	210
	Parking						
	Garage	Spaces	147 (20 Maint. Storage Spaces)	127	152	170	204
	Surface Lot	Spaces	58	40	48	54	64

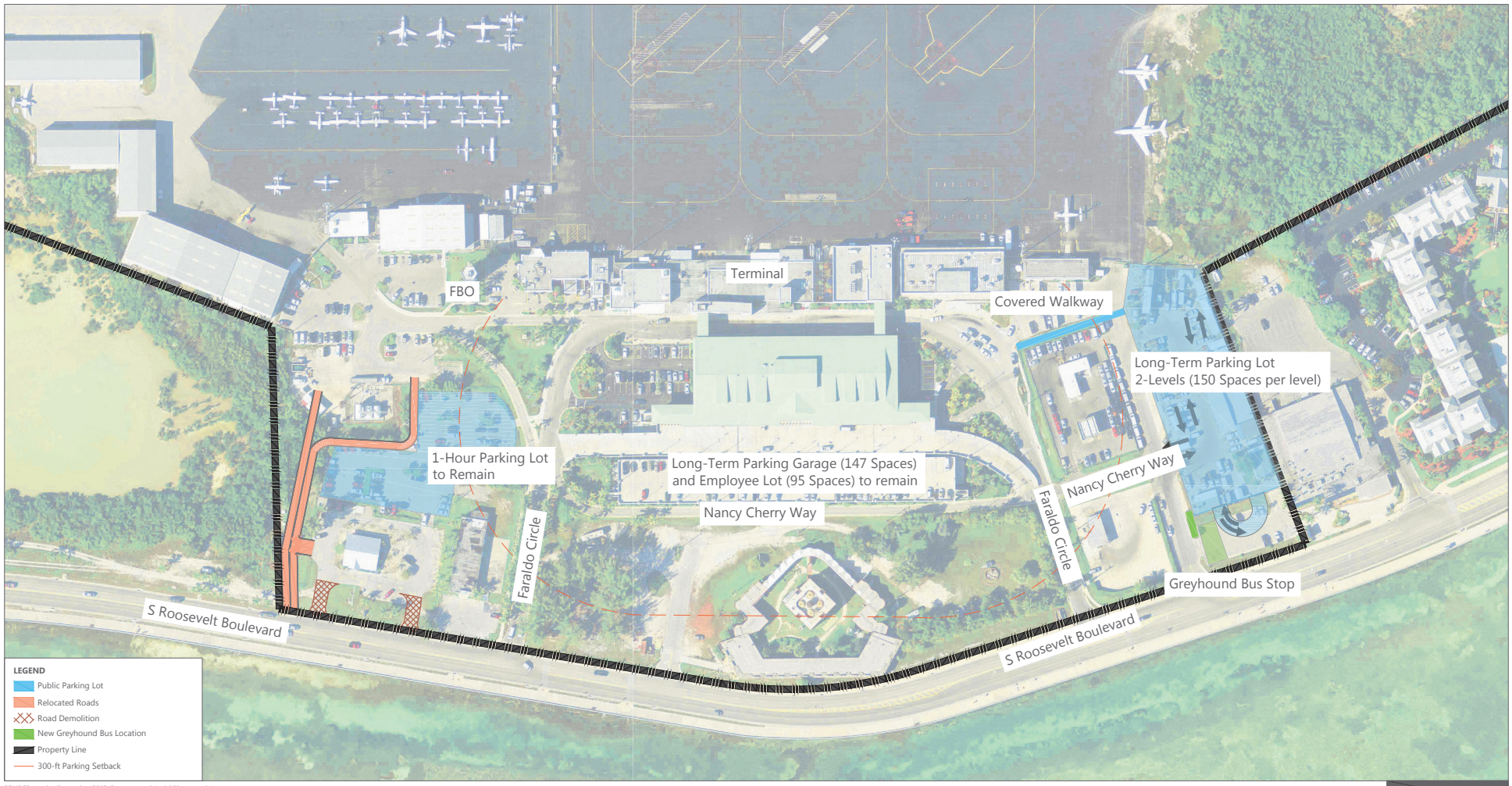
2. Alternatives Considerations:

- Private vehicle curb requirements deficient today
- Taxi curb and staging
  - Avoid radio operations and loss of line-of-sight queuing
- Commercial curb expansion by 2025
- Deficiencies in public parking
  - At capacity today
  - Additional parking structure to meet long-term requirements

3. Master Plan Objectives:

- Complete a comprehensive assessment of traffic flows within the terminal area
- Evaluate the existing airport access road and curbside capacity to relieve congestion
- Assess and evaluate the existing parking product capacities and the supply of non-revenue generation parking
- Provided dedicated access to the existing Fixed Based Operator (FBO) and fuel farm

[PRELIMINARY DRAFT- FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]



SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., October 2016.

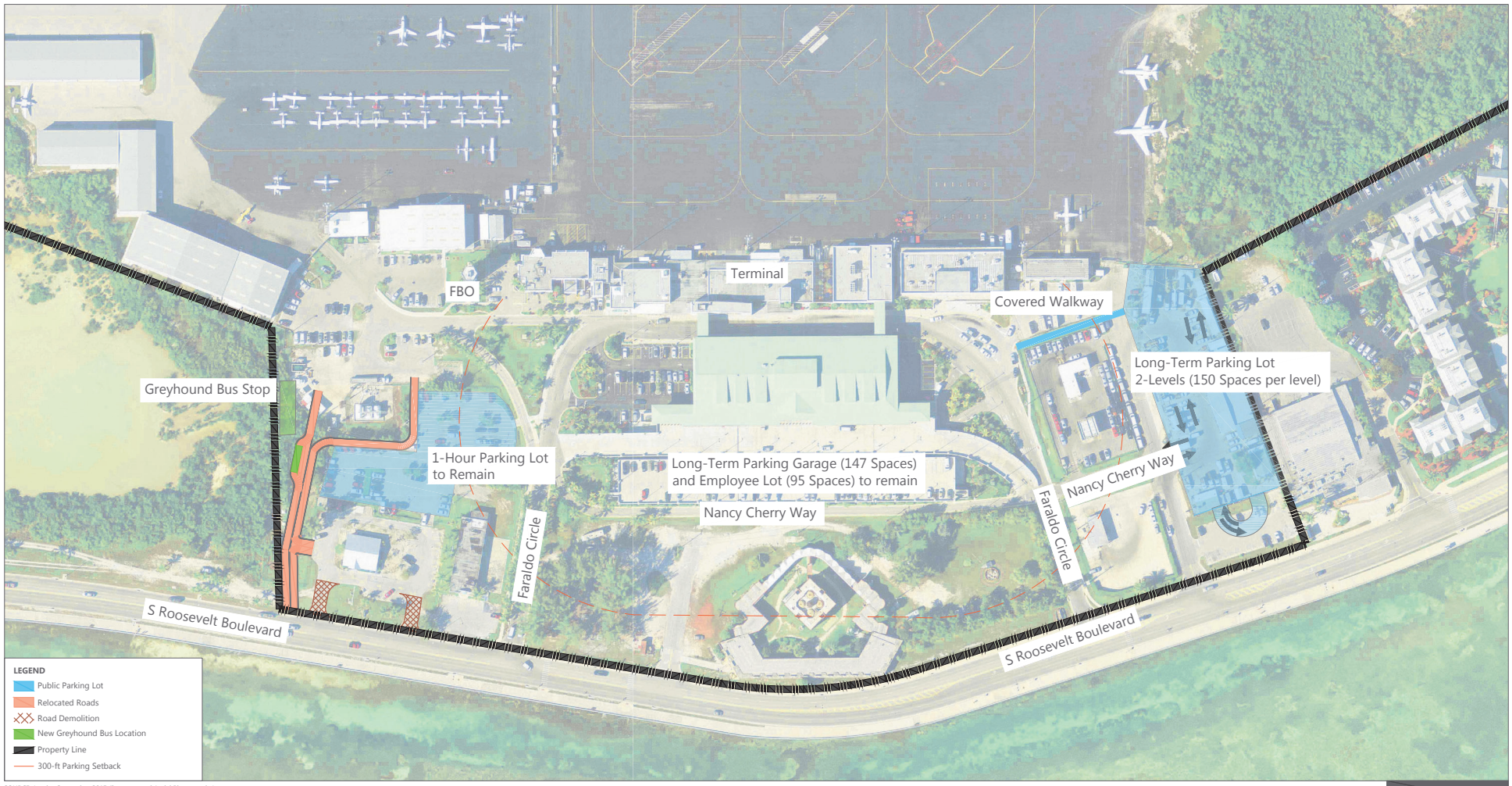
EXHIBIT 6.4-1

NORTH 0 200 ft

Parking / Airport Access
Alternative 1

Drawing: N:\EYW\Master Plan\04-Working\02-Landside\CAD\EYW-Landside_Alts_v6(2025 Curb).dwgLayout: Ex_6.4-1 Plotted: Oct 28, 2016, 10:48AM

[PRELIMINARY DRAFT- FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]



SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., October 2016.

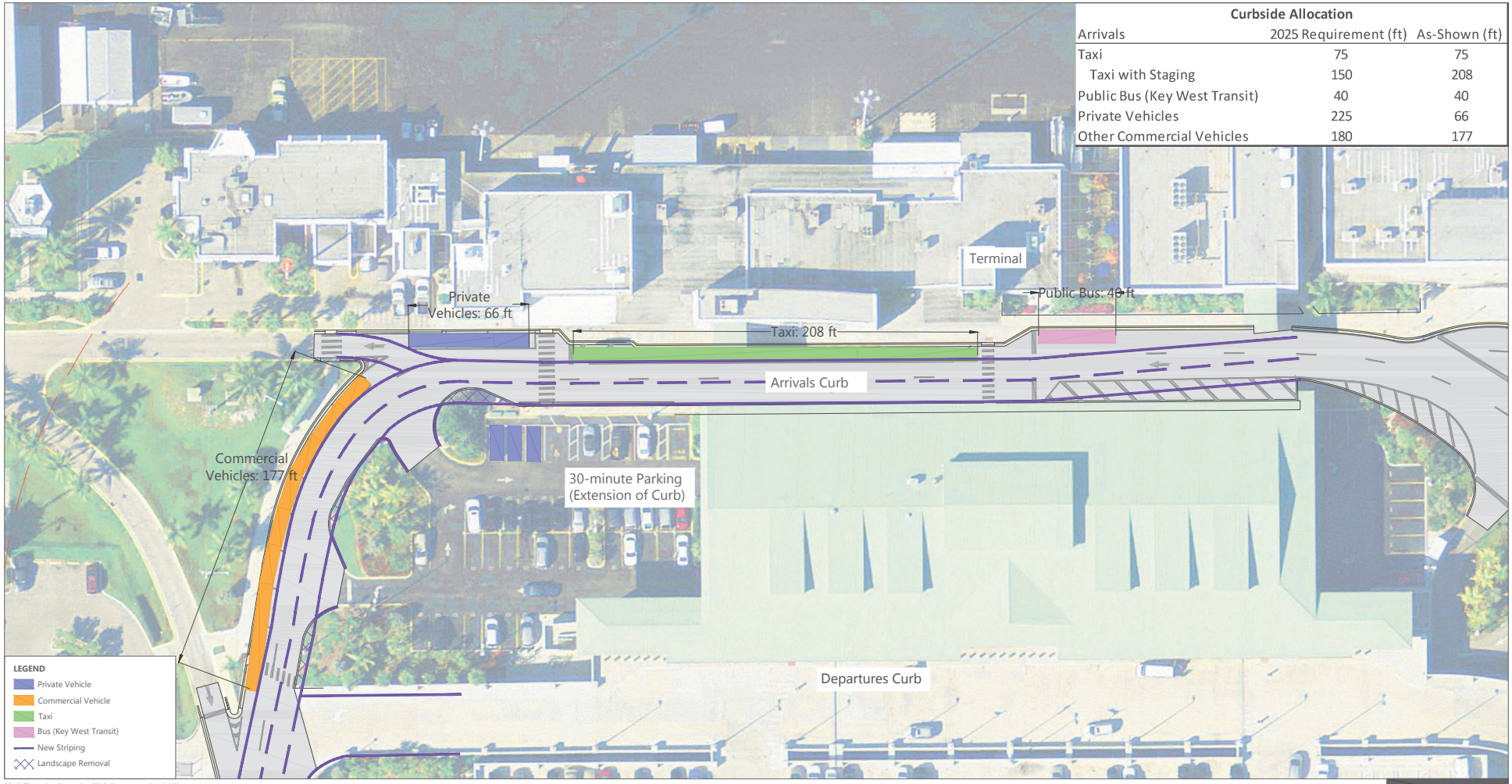
EXHIBIT 6.4-2

NORTH 0 200 ft

Parking / Airport Access
Alternative 2

Drawing: N:\EYW\Master Plan\04-Working\02-Landside\CAD\EYW-Landside_Alts_v6(2025 Curb).dwgLayout: Ex_6.4-2 Plotted: Oct 28, 2016, 10:48AM

[PRELIMINARY DRAFT- FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]



Curbside Allocation

Arrivals	2025 Requirement (ft)	As-Shown (ft)
Taxi	75	75
Taxi with Staging	150	208
Public Bus (Key West Transit)	40	40
Private Vehicles	225	66
Other Commercial Vehicles	180	177

SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., October 2016.

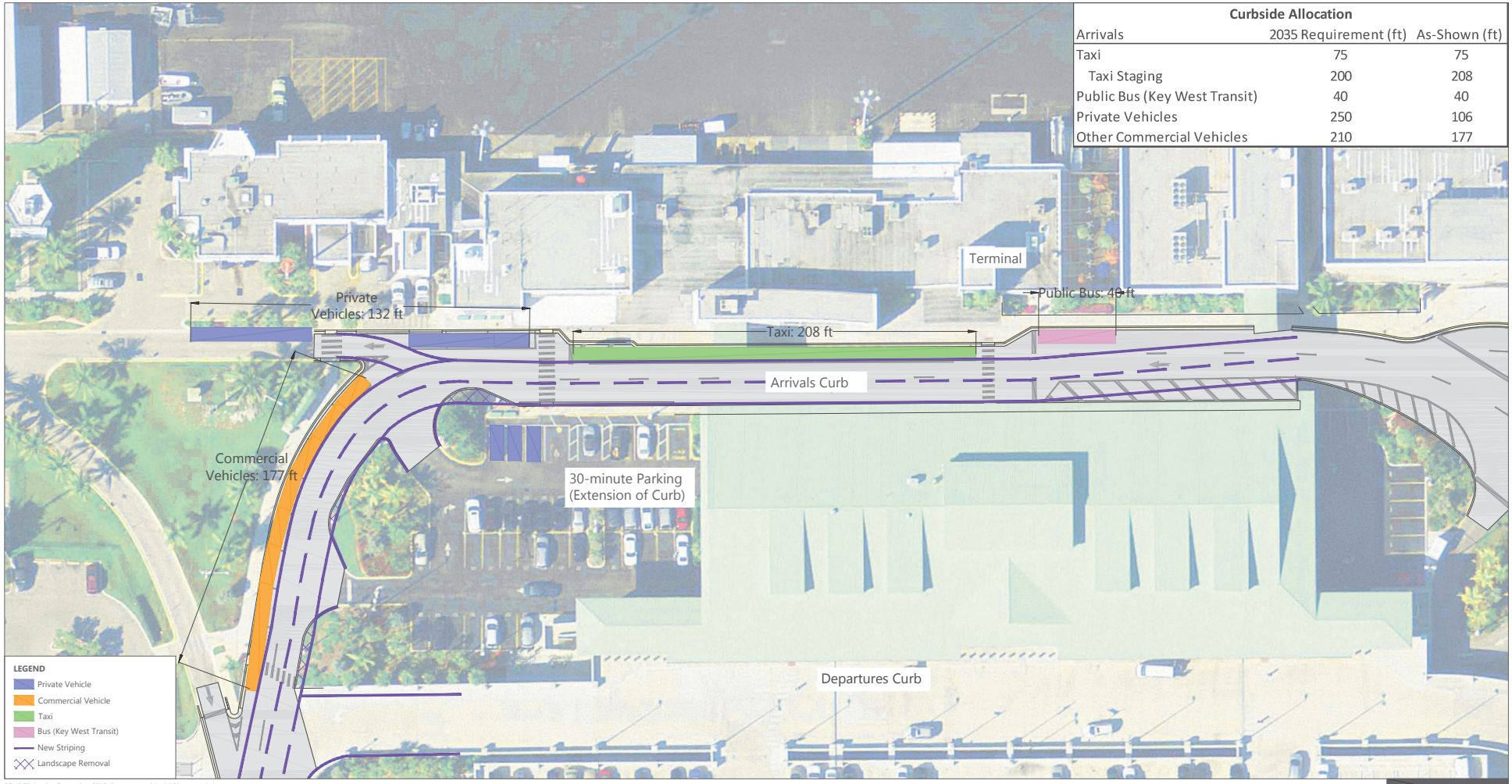
EXHIBIT 6.4-3

NORTH 0 50 ft

2025 Arrivals Curb

Drawing: N:\EYW\Master Plan\04-Working\02-Landside\CAD\EYW-Landside_Alts_v6(2025 Curb).dwg Layout: Ex_6.4-3 Plotted: Oct 28, 2016, 10:48AM

[PRELIMINARY DRAFT- FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]



Curbside Allocation

Arrivals	2035 Requirement (ft)	As-Shown (ft)
Taxi	75	75
Taxi Staging	200	208
Public Bus (Key West Transit)	40	40
Private Vehicles	250	106
Other Commercial Vehicles	210	177

SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., October 2016.

EXHIBIT 6.4-4

NORTH 0 50 ft

2035 Arrivals Curb

Drawing: N:\EYW\Master Plan\04-Working\02-Landside\CAD\EYW-Landside_Alts_v6(2035 Curb).dwgLayout: Ex_6.4-4 Plotted: Oct 28, 2016, 10:48AM



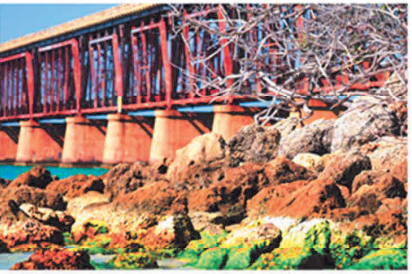
Section 5

GENERAL AVIATION & JOINT-USE UPDATE

Next Steps

- Revise alternatives to address comments
- Submit Demand/Capacity Chapter
- Begin Documentation of Alternatives Analyses
- Select Preferred Development Plan
  - Initiate environmental review and financial planning of preferred plan
- Develop Airport Layout Plan (ALP) Drawing Set







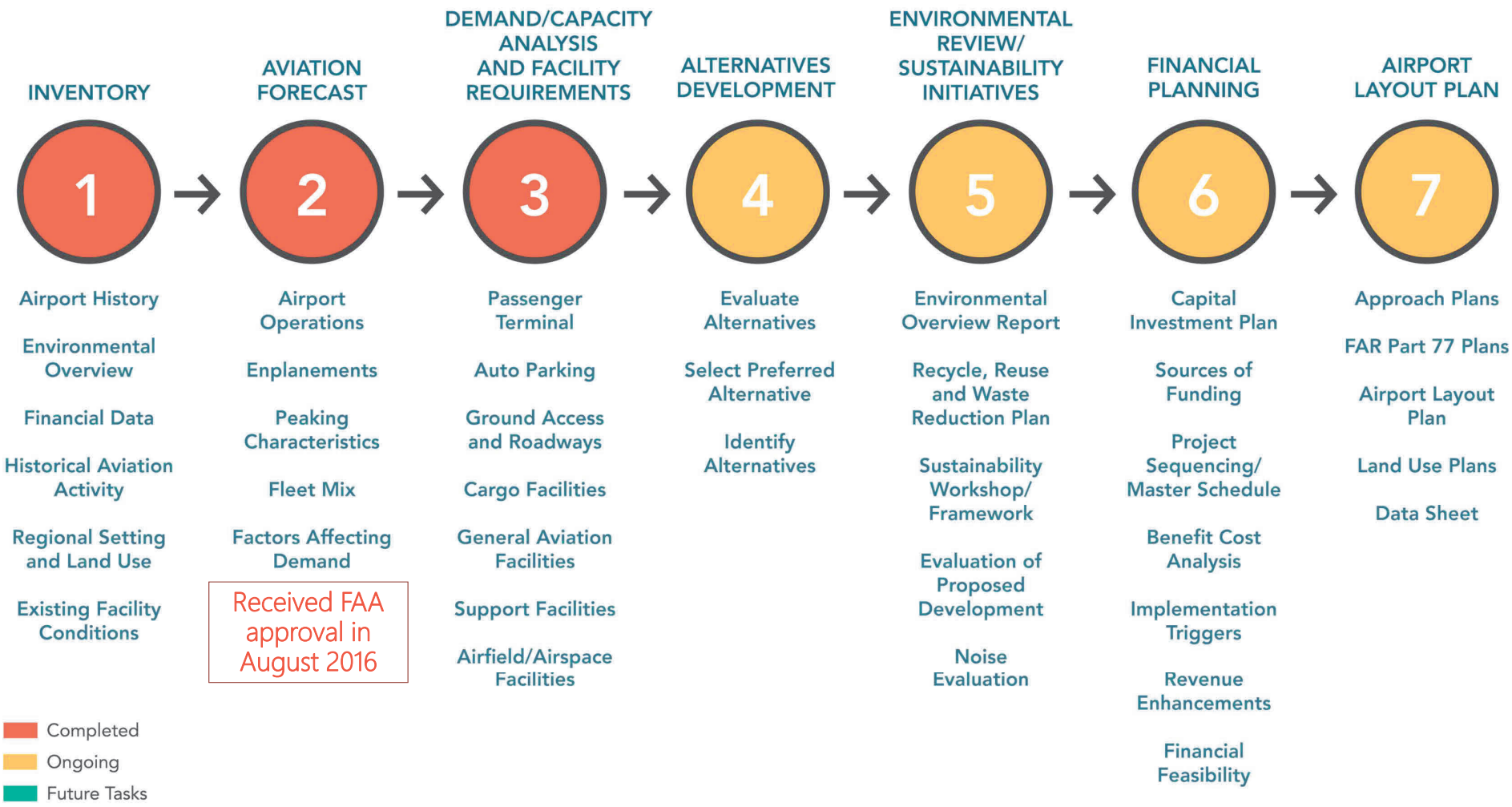






Key West International Airport Master Plan Study
Technical Review Committee #3

Master Plan Progress





Section 1

AIRSIDE & AIRCRAFT RAMP

Airside & Aircraft Ramp

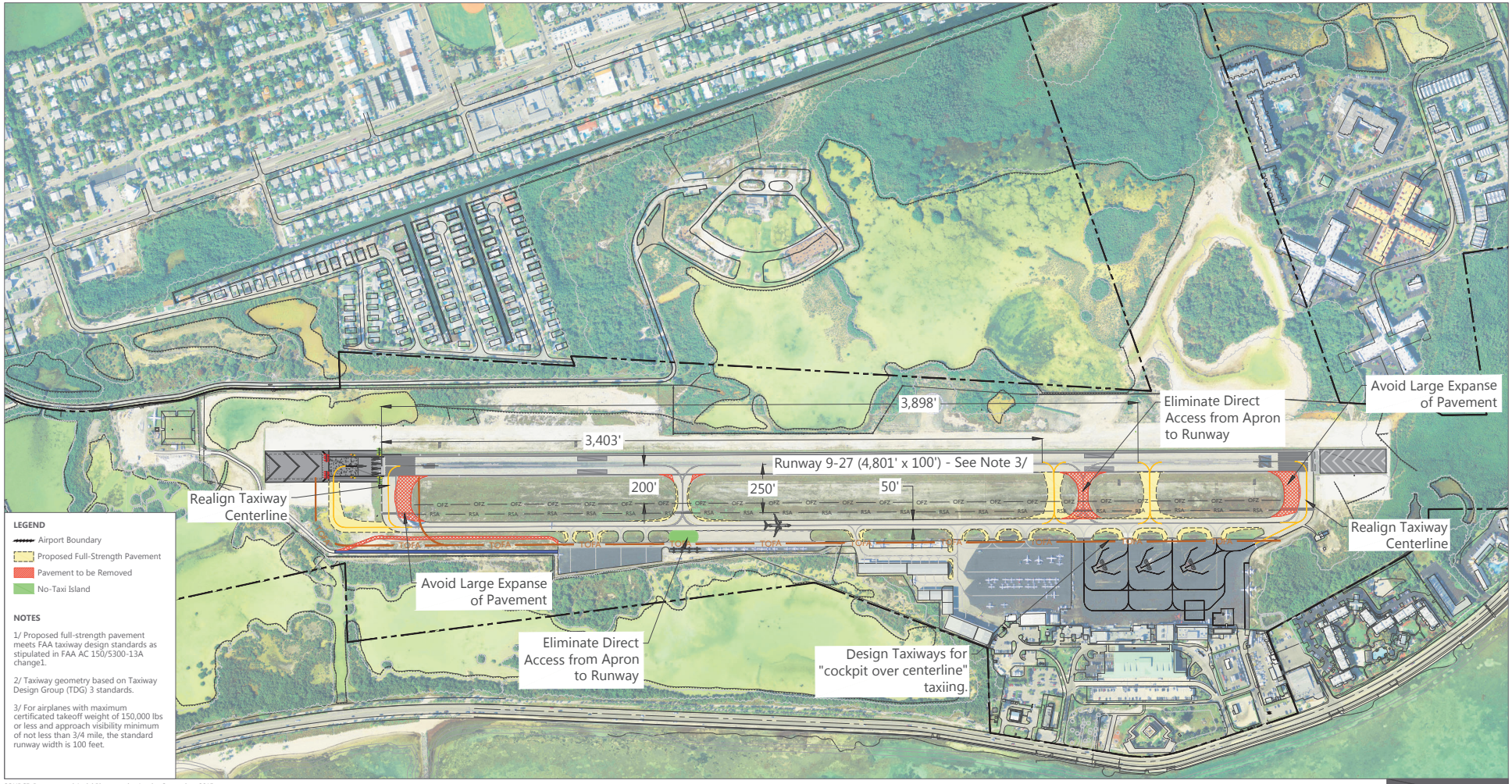
1. **Alternatives Considerations**:

- Airfield design criteria compliance
  - Wide expanses of pavement
  - Fillet modifications
  - Direct access from ramp to runway
  - 3-node criteria

2. **Master Plan Objectives**:

- Identify critical aircraft and future airfield requirements (runway length, width, etc.)
- Assess ways to maximize the existing aircraft ramp layout
- Preserve the integrity of the security identification display area (SIDA) separating the general aviation and commercial ramps
- Evaluate whether the installation of passenger boarding bridge could improve the level of service at the Airport
- Identify areas for the staging of ground support equipment (GSE)

[Preliminary Draft for Discussion Purposes Only]



SOURCE: Basemap and Aerial Photography, Jacobs, September, 2015
PREPARED BY: Ricondo & Associates, Inc., February, 2016.

EXHIBIT 3

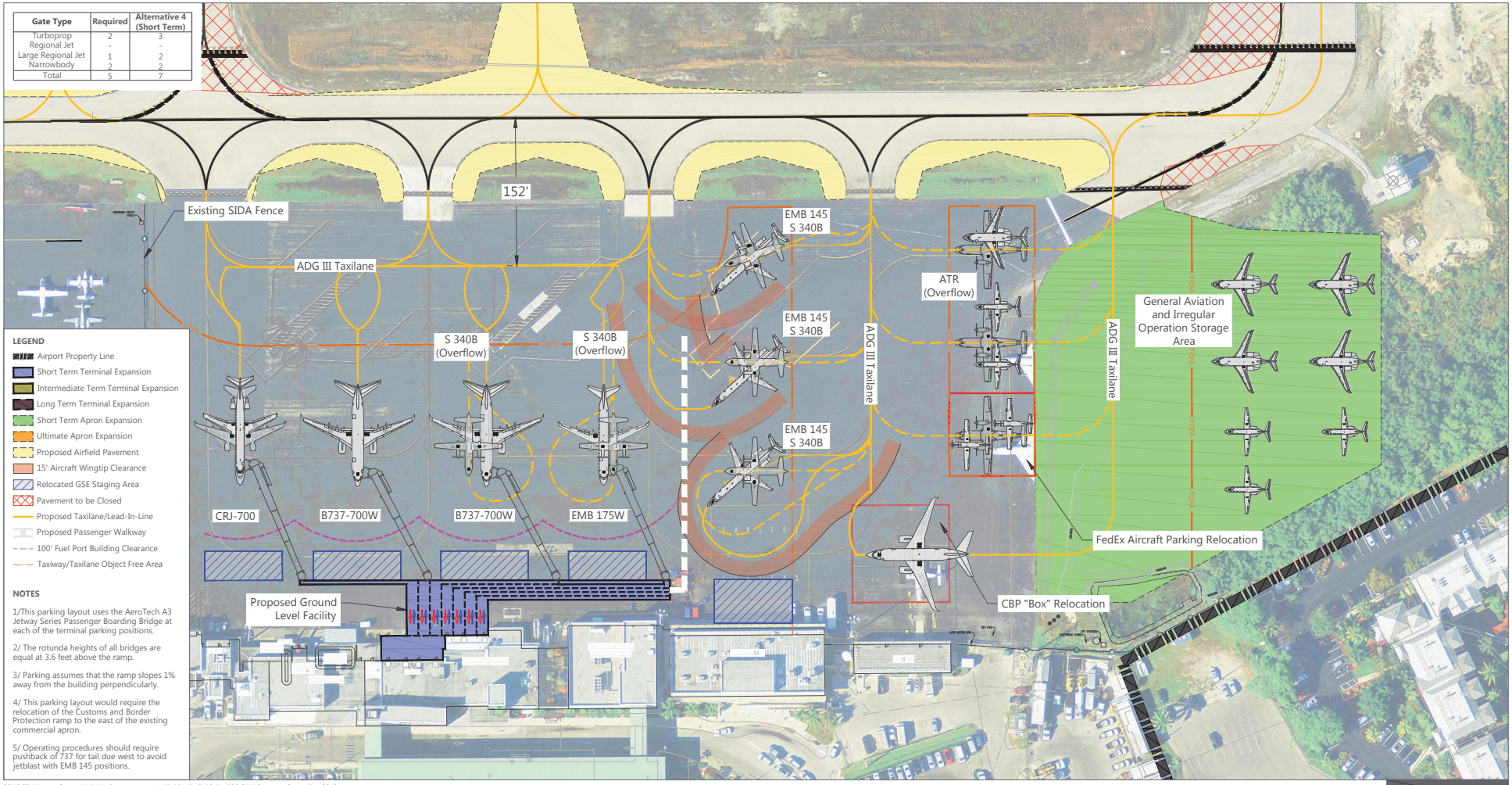
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Drawing: M:\Monroe County\Task 200 - EYW Master Plan\214- Supplemental Tasks\Airfield Geometry Assessment\CAD\EYW-Airfield Geometry Assessment_Option 3_20170411.dwgLayout: 11x17L Plotted: May 18, 2017, 04:38PM

Airfield Geometry Assessment Option 3

[PRELIMINARY DRAFT FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]

Gate Type	Required	Alternative 4 (Short Term)
Turboprop	2	3
Regional Jet	-	-
Large Regional Jet	1	2
Narrowbody	2	2
Total	5	7



SOURCE: Monroe County Aviation Department, *Ameribridge Radial Drive PBB EYW Concepts*, September 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

EXHIBIT 1

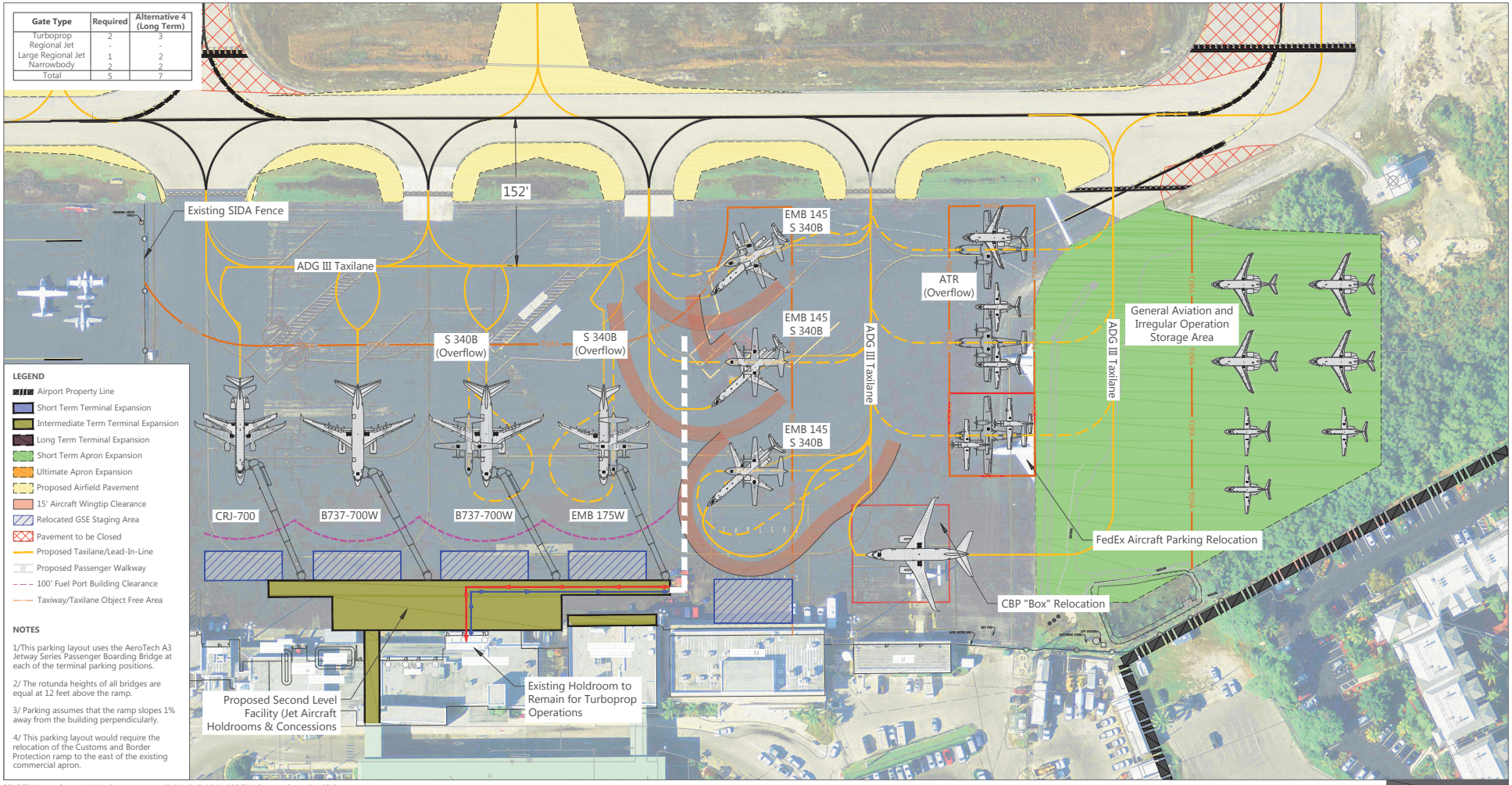
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Drawing: P:\Monroe County FL\Task 200 - EYW Master Plan\206 - Alternatives\CAD\Commercial Apron_Alternative 4_Short Term.dwgLayout: Short Term Plotted: Mar 2, 2017, 09:27AM

Commercial Apron
Alternative 4 (Short/Intermediate Term)

[PRELIMINARY DRAFT FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]

Gate Type	Required	Alternative 4 (Long Term)
Turboprop	2	3
Regional Jet	-	-
Large Regional Jet	1	2
Narrowbody	2	2
Total	5	7



SOURCE: Monroe County Aviation Department, *Ameribridge Radial Drive PBB EYW Concepts*, September 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

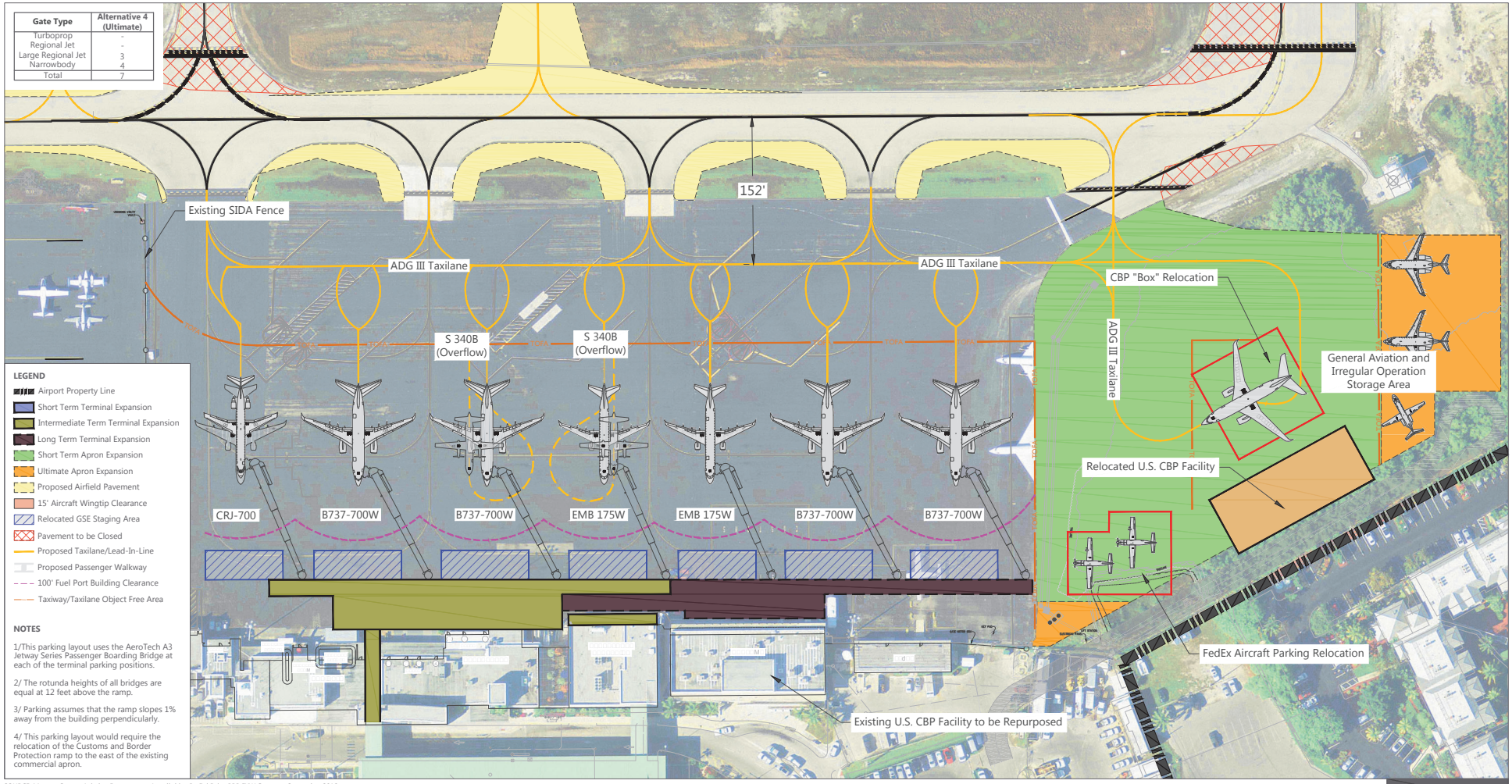
EXHIBIT 2

NORTH 0 □00 ft.

Commercial Apron
Alternative 4 (Intermediate/Long Term)

Drawing: P:\Monroe County FL\Task 200 - EYW Master Plan\206 - Alternatives\CAD\Commercial Apron_Alternative 4_Long Term.dwgLayout: Long Term Plotted: Mar 2, 2017, 09:28AM

[PRELIMINARY DRAFT FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]



SOURCE: Monroe County Aviation Department, *Ameribridge Radial Drive PBB EYW Concepts*, September 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

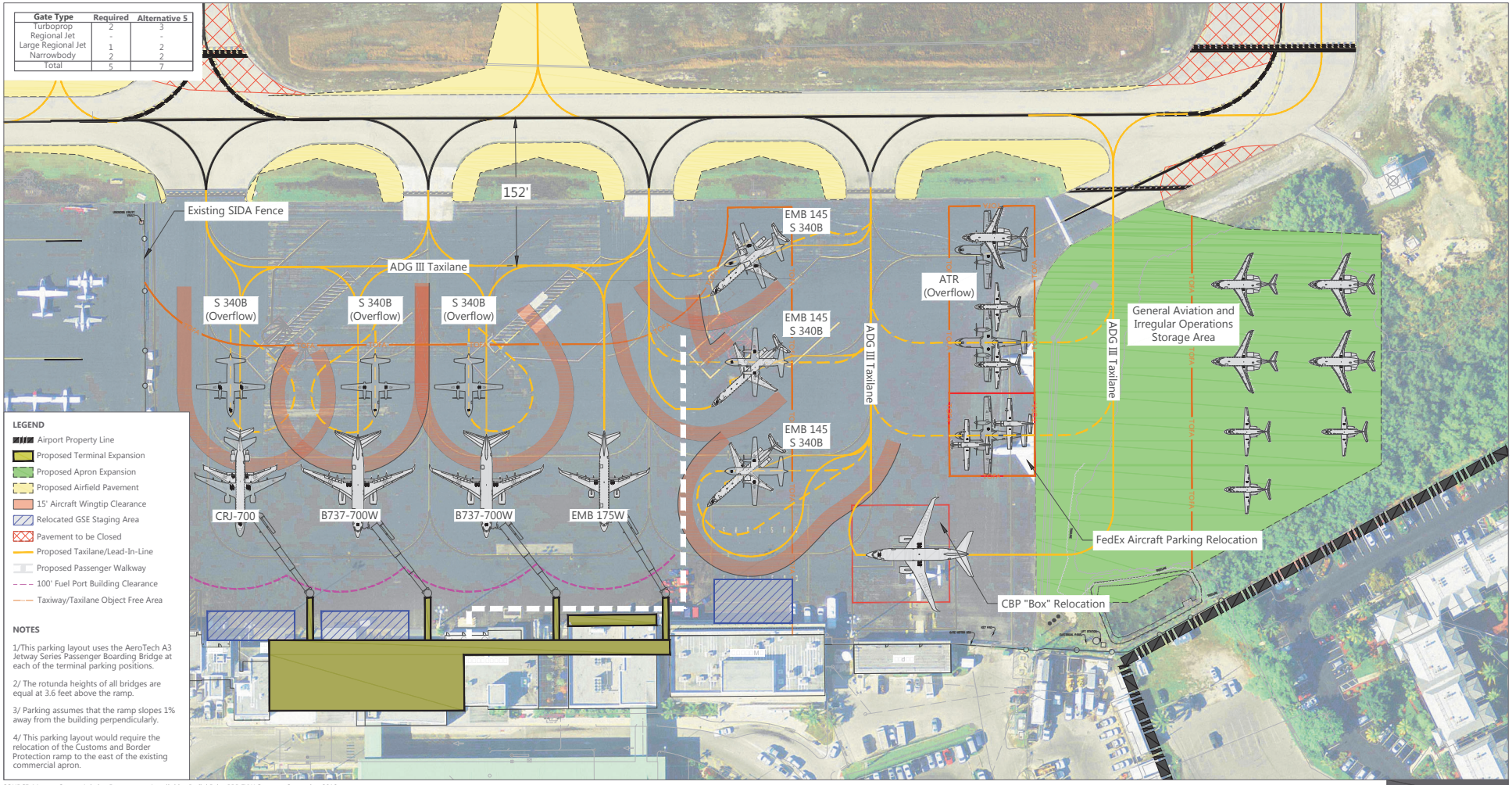
EXHIBIT 3

NORTH 0 00 ft.

Drawing: P:\Monroe County FL\Task 200 - EYW Master Plan\206 - Alternatives\CAD\Commercial Apron_Alternative 4_Beyond.dwgLayout: Ultimate Plotted: Mar 2, 2017, 09:32AM

Commercial Apron
Alternative 4 (Beyond the Planning Period)

[PRELIMINARY DRAFT FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]



SOURCE: Monroe County Aviation Department, *Ameribridge Radial Drive PBB EYW Concepts*, September 2016.
PREPARED BY: Ricondo & Associates, Inc., November 2016.

EXHIBIT 4

NORTH 0 00 ft.

Drawing: P:\Monroe County FL\Task 200 - EYW Master Plan\206 - Alternatives\CAD\Commercial Apron_Alternative 5.dwgLayout: Option 5 Plotted: Mar 2, 2017, 09:36AM

Commercial Apron Alternative 5



Section 2

TERMINAL

Terminal

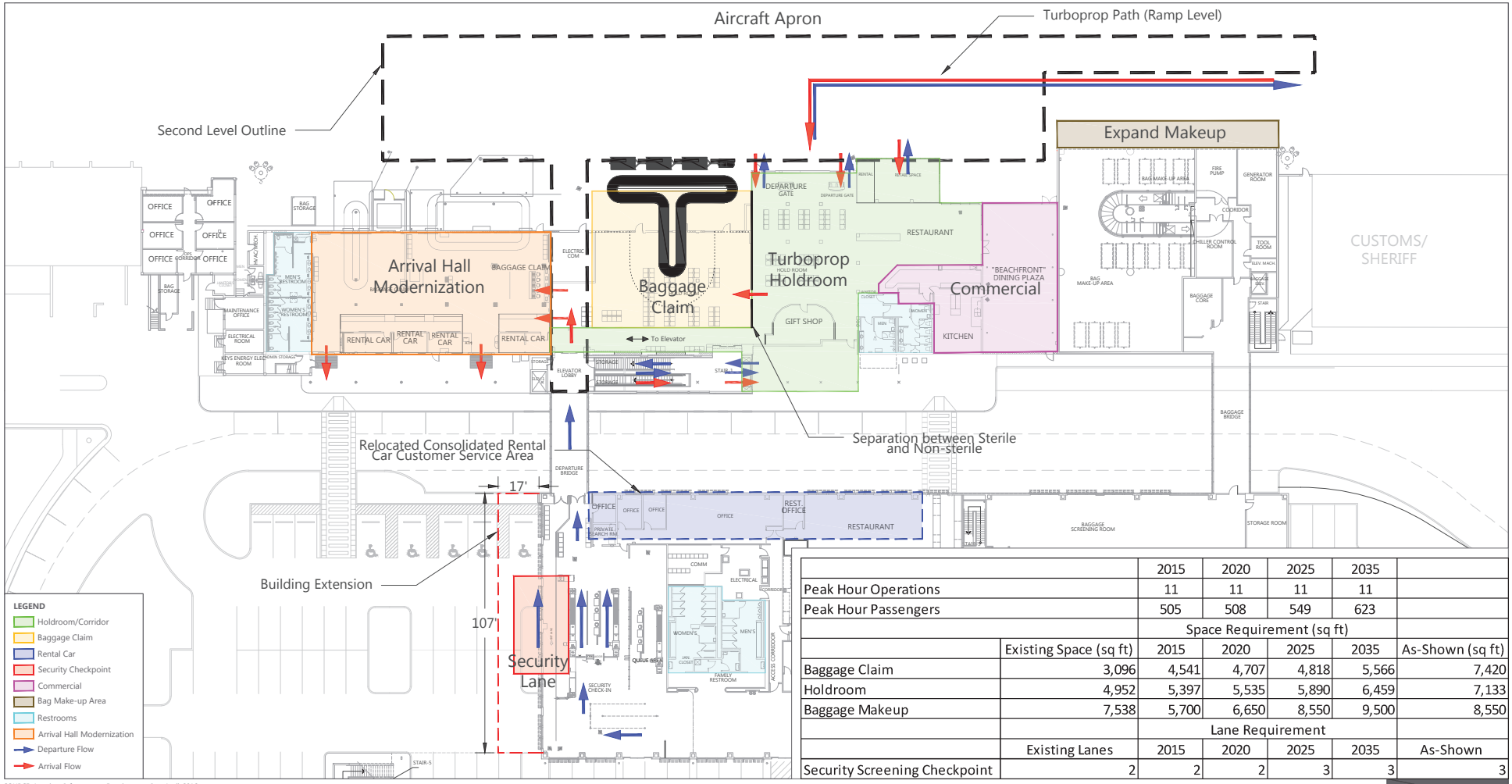
1. Alternatives Considerations:

- 3rd security screening checkpoint (SSCP) lane needed by 2025
- Holdroom areas deficient today – requires an additional 1,500 s.f. by 2035
- Baggage claim area deficient today – requires an additional 2,500 s.f. by 2035
- Outbound baggage makeup – requires an additional 2,000 s.f. by 2035
- 2025 and 2035 aircraft gate requirements

2. Master Plan Objectives:

- Reevaluate the capacity of the existing passenger terminal
- Define a financially-sound expansion program that accommodates immediate, mid-term, and long-term needs focusing on improving passenger convenience and level of service
- Review congestion in the baggage claim area

[PRELIMINARY DRAFT-FOR DISCUSSION PURPOSES ONLY-NOT FOR DISTRIBUTION]



		2015	2020	2025	2035	
Peak Hour Operations		11	11	11	11	
Peak Hour Passengers		505	508	549	623	
		Space Requirement (sq ft)				
	Existing Space (sq ft)	2015	2020	2025	2035	As-Shown (sq ft)
Baggage Claim	3,096	4,541	4,707	4,818	5,566	7,420
Holdroom	4,952	5,397	5,535	5,890	6,459	7,133
Baggage Makeup	7,538	5,700	6,650	8,550	9,500	8,550
		Lane Requirement				
	Existing Lanes	2015	2020	2025	2035	As-Shown
Security Screening Checkpoint	2	2	2	3	3	3

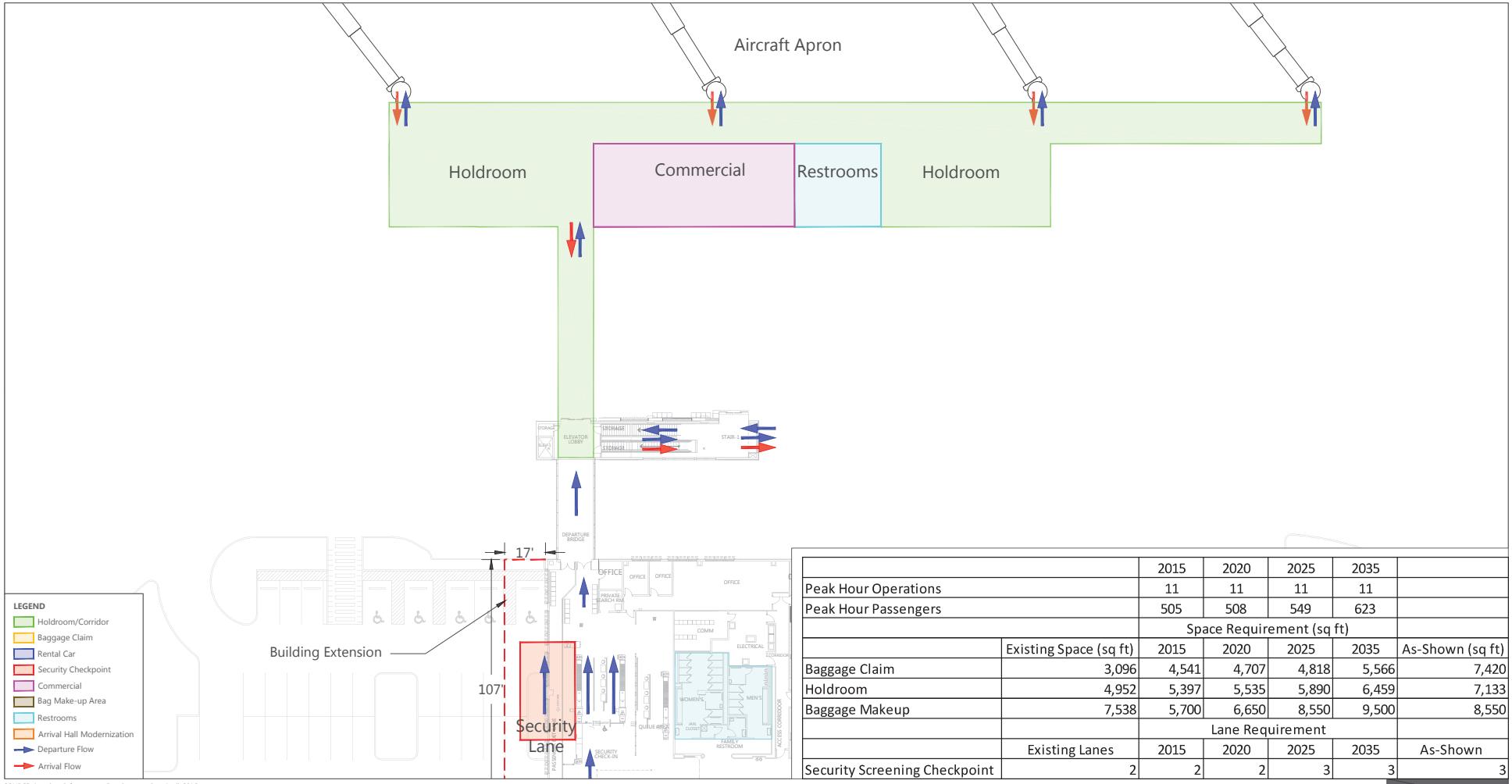
SOURCE: American Infrastructure Development, Inc., April, 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2017.

EXHIBIT T4a

NORTH 0 40 ft.

Terminal Alternative 4-Second Level Holdroom over Apron
First Floor

[PRELIMINARY DRAFT-FOR DISCUSSION PURPOSES ONLY-NOT FOR DISTRIBUTION]



		2015	2020	2025	2035	
Peak Hour Operations		11	11	11	11	
Peak Hour Passengers		505	508	549	623	
		Space Requirement (sq ft)				
	Existing Space (sq ft)	2015	2020	2025	2035	As-Shown (sq ft)
Baggage Claim	3,096	4,541	4,707	4,818	5,566	7,420
Holdroom	4,952	5,397	5,535	5,890	6,459	7,133
Baggage Makeup	7,538	5,700	6,650	8,550	9,500	8,550
		Lane Requirement				
	Existing Lanes	2015	2020	2025	2035	As-Shown
Security Screening Checkpoint	2	2	2	3	3	3

SOURCE: American Infrastructure Development, Inc., April, 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2017.

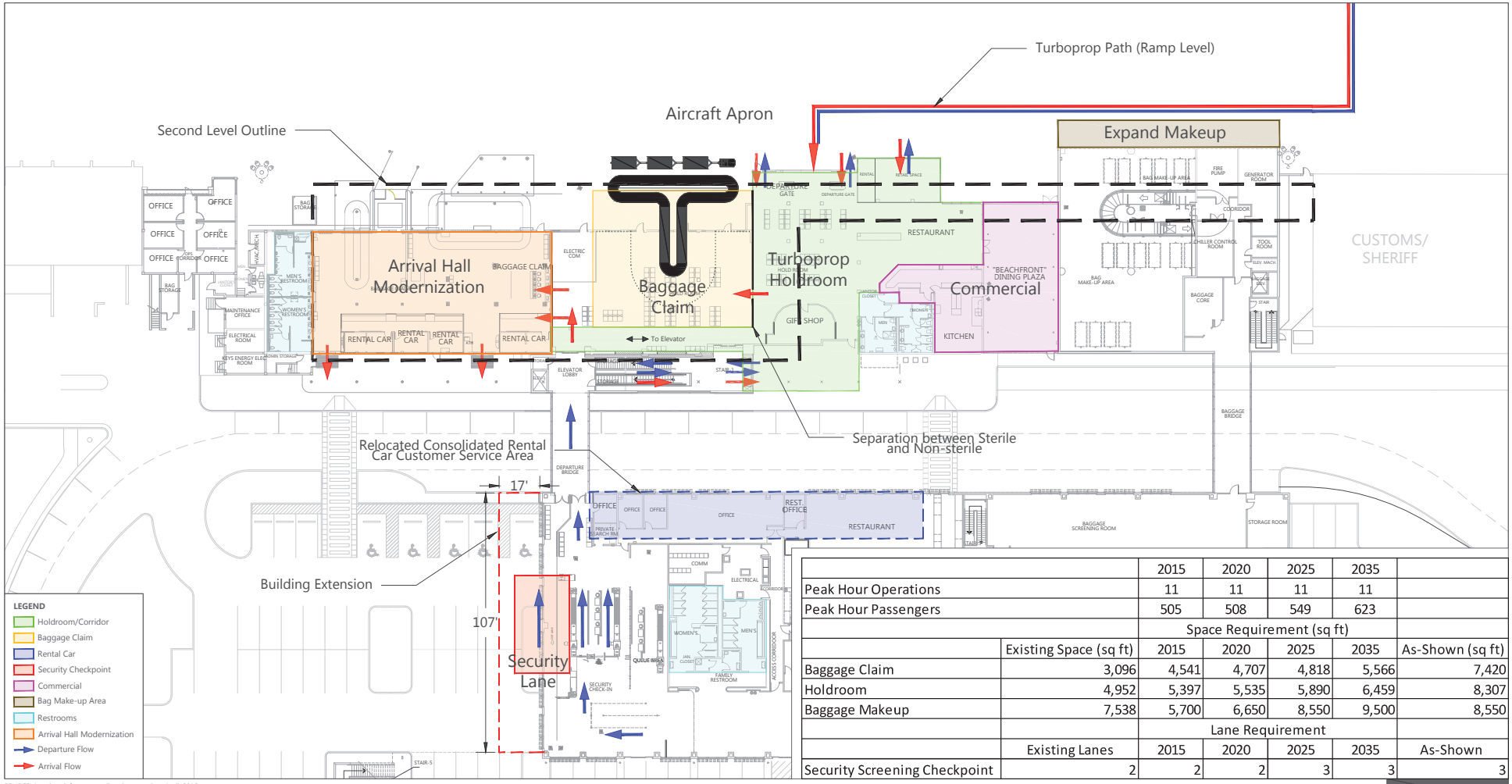
EXHIBIT T4b

NORTH 0 40 ft.

Terminal Alternative 4-Second Level Holdroom over Apron
Second Floor

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\Terminal Alternatives\Terminal Alternative 4b-Upper_v2.dwgLayout: 11X17 Plotted: Mar 13, 2017, 10:18AM

[PRELIMINARY DRAFT-FOR DISCUSSION PURPOSES ONLY-NOT FOR DISTRIBUTION]



		2015	2020	2025	2035	
Peak Hour Operations		11	11	11	11	
Peak Hour Passengers		505	508	549	623	
		Space Requirement (sq ft)				
	Existing Space (sq ft)	2015	2020	2025	2035	As-Shown (sq ft)
Baggage Claim	3,096	4,541	4,707	4,818	5,566	7,420
Holdroom	4,952	5,397	5,535	5,890	6,459	8,307
Baggage Makeup	7,538	5,700	6,650	8,550	9,500	8,550
		Lane Requirement				
	Existing Lanes	2015	2020	2025	2035	As-Shown
Security Screening Checkpoint	2	2	2	3	3	3

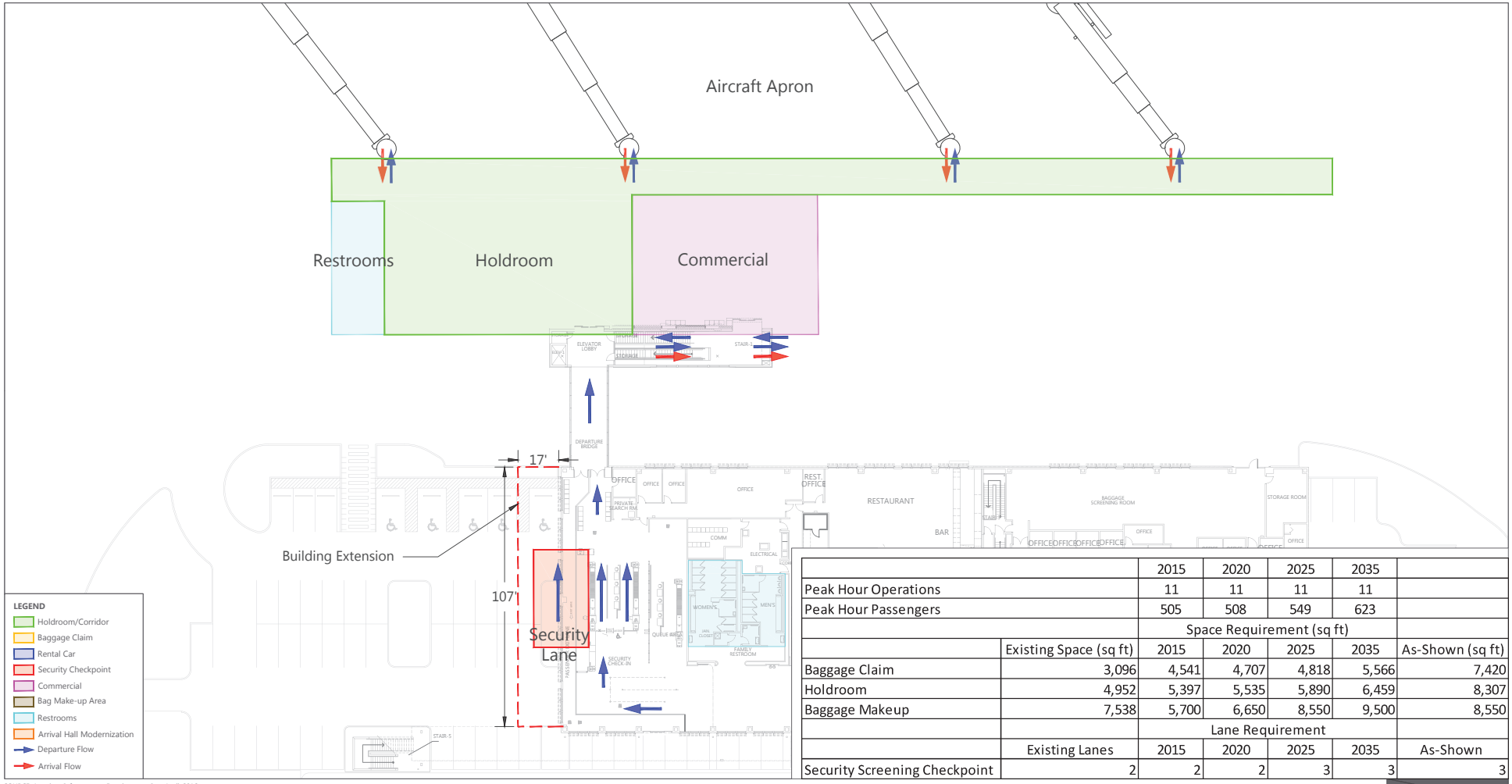
SOURCE: American Infrastructure Development, Inc., April, 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2017.

EXHIBIT T5a

NORTH 0 40 ft.

Terminal Alternative 5-Second Level Holdroom over Terminal First Floor

[PRELIMINARY DRAFT-FOR DISCUSSION PURPOSES ONLY-NOT FOR DISTRIBUTION]



		2015	2020	2025	2035	
Peak Hour Operations		11	11	11	11	
Peak Hour Passengers		505	508	549	623	
		Space Requirement (sq ft)				
	Existing Space (sq ft)	2015	2020	2025	2035	As-Shown (sq ft)
Baggage Claim	3,096	4,541	4,707	4,818	5,566	7,420
Holdroom	4,952	5,397	5,535	5,890	6,459	8,307
Baggage Makeup	7,538	5,700	6,650	8,550	9,500	8,550
		Lane Requirement				
	Existing Lanes	2015	2020	2025	2035	As-Shown
Security Screening Checkpoint	2	2	2	3	3	3

SOURCE: American Infrastructure Development, Inc., April, 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2017.

EXHIBIT T5b

NORTH 0 40 ft.

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\Terminal Alternatives\Terminal Alternative 5b-Upper_v2.dwgLayout: 11X17 Plotted: Mar 13, 2017, 10:15AM

Terminal Alternative 5-Second Level Holdroom over Terminal Second Floor



Section 3

PARKING AND ROADWAY

Parking and Roadway

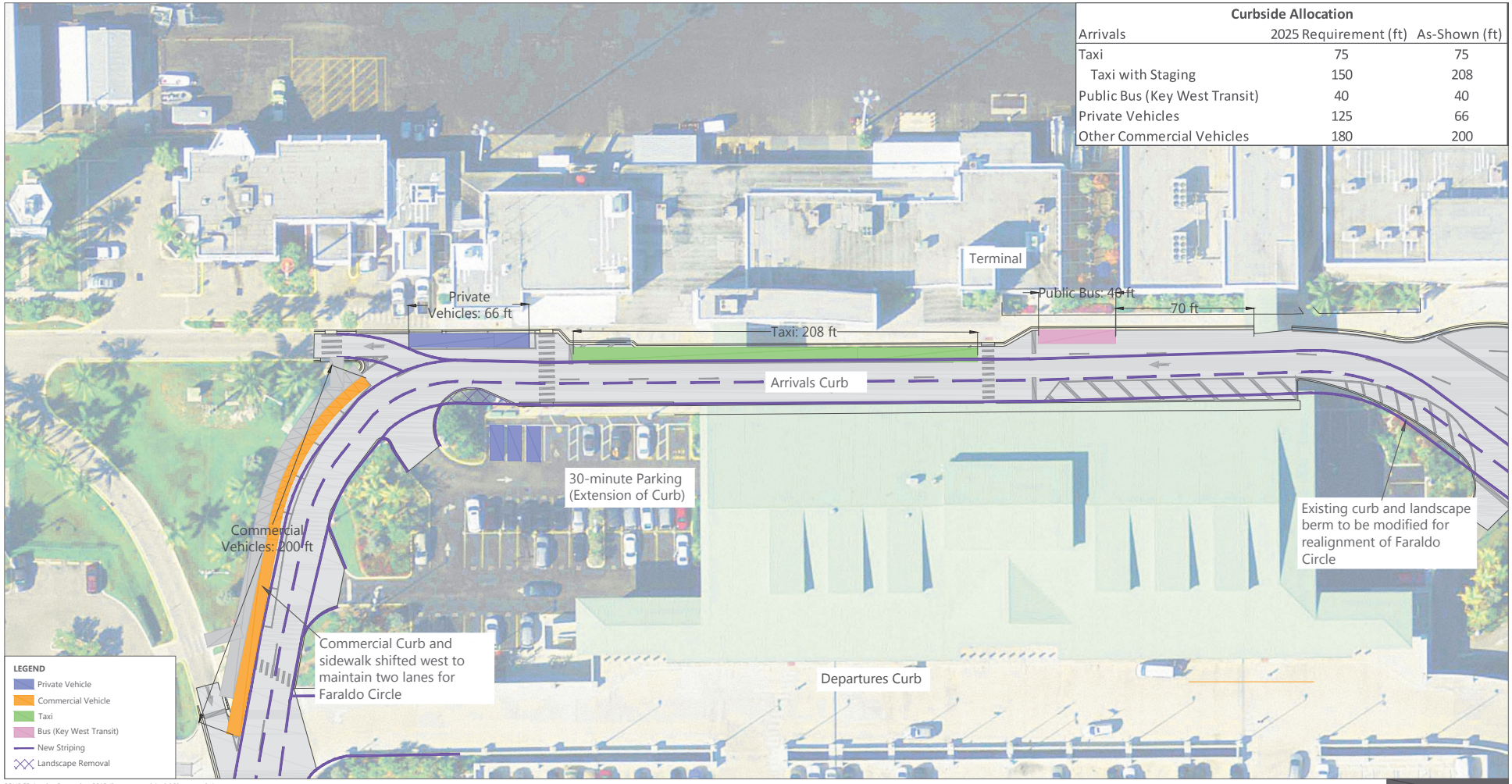
1. Alternatives Considerations:

- Private vehicle curb deficient – requires an additional 40 linear feet by 2035
- Taxi curb and staging
  - Avoid radio operations
- Commercial curb improvement for enhanced 2-lane terminal roadway
- Deficiencies in public parking
  - At capacity today – requires an additional 83 spots by 2035
  - Additional parking structure to meet incremental future demand

2. Master Plan Objectives:

- Assess traffic flows within the terminal area
- Evaluate the existing airport access road and curbside capacity to relieve congestion
- Assess and evaluate the existing parking product capacities and the supply of non-revenue generation parking
- Provide dedicated access to the existing Fixed Based Operator (FBO) and fuel farm

[PRELIMINARY DRAFT- FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]



Curbside Allocation

Arrivals	2025 Requirement (ft)	As-Shown (ft)
Taxi	75	75
Taxi with Staging	150	208
Public Bus (Key West Transit)	40	40
Private Vehicles	125	66
Other Commercial Vehicles	180	200

SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., April 2017.

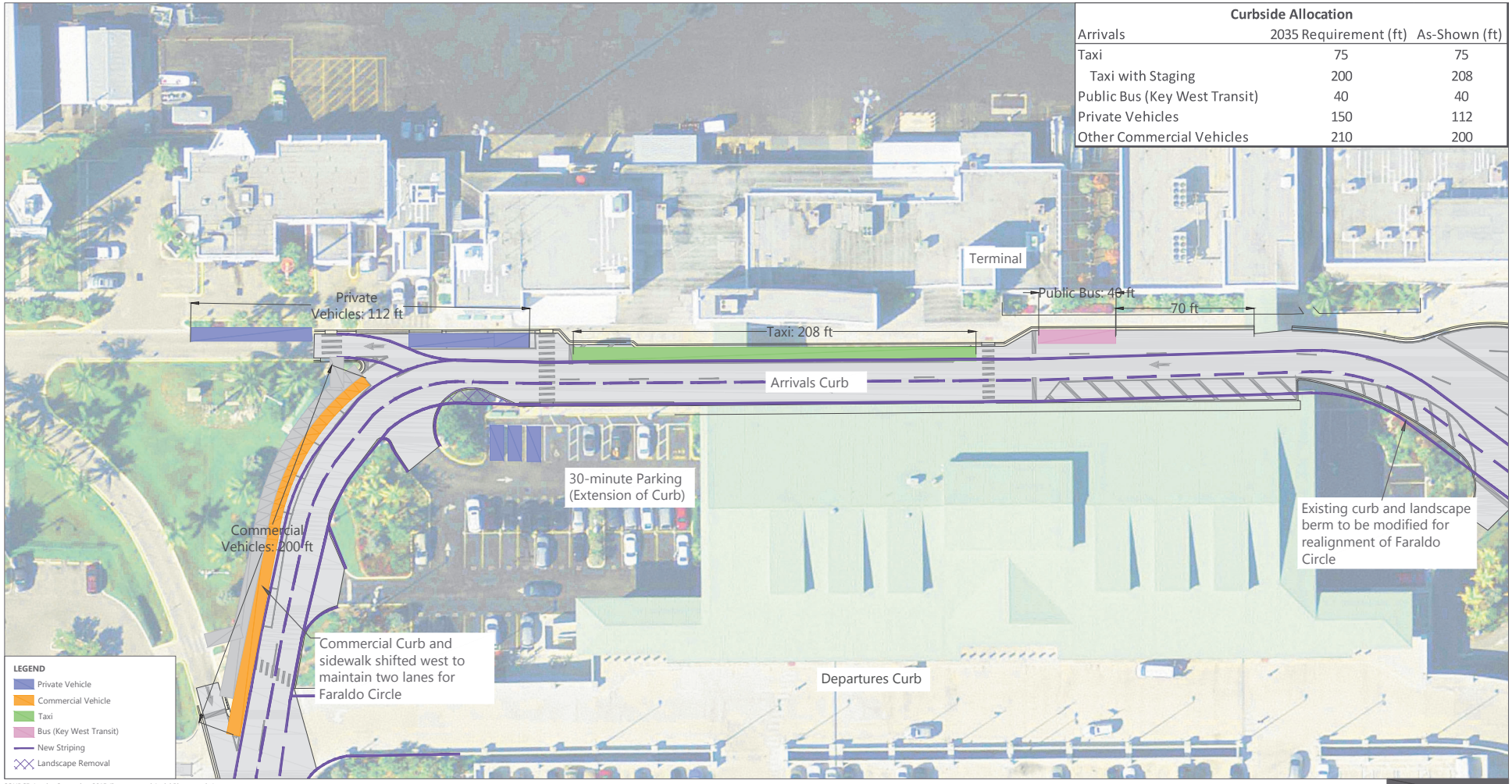
EXHIBIT 5.3-1

NORTH 0 0 ft

2025 Arrivals Curb

Drawing: P:\Monroe County FL\Task 200 - EYW Master Plan\206 - Alternatives\CAD\EYW-Landside_Alts_v8(2025 Curb).dwgLayout: Ex_5.3-1 Plotted: May 19, 2017, 09:45AM

[PRELIMINARY DRAFT- FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]



Curbside Allocation

Arrivals	2035 Requirement (ft)	As-Shown (ft)
Taxi	75	75
Taxi with Staging	200	208
Public Bus (Key West Transit)	40	40
Private Vehicles	150	112
Other Commercial Vehicles	210	200

SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., April 2017.

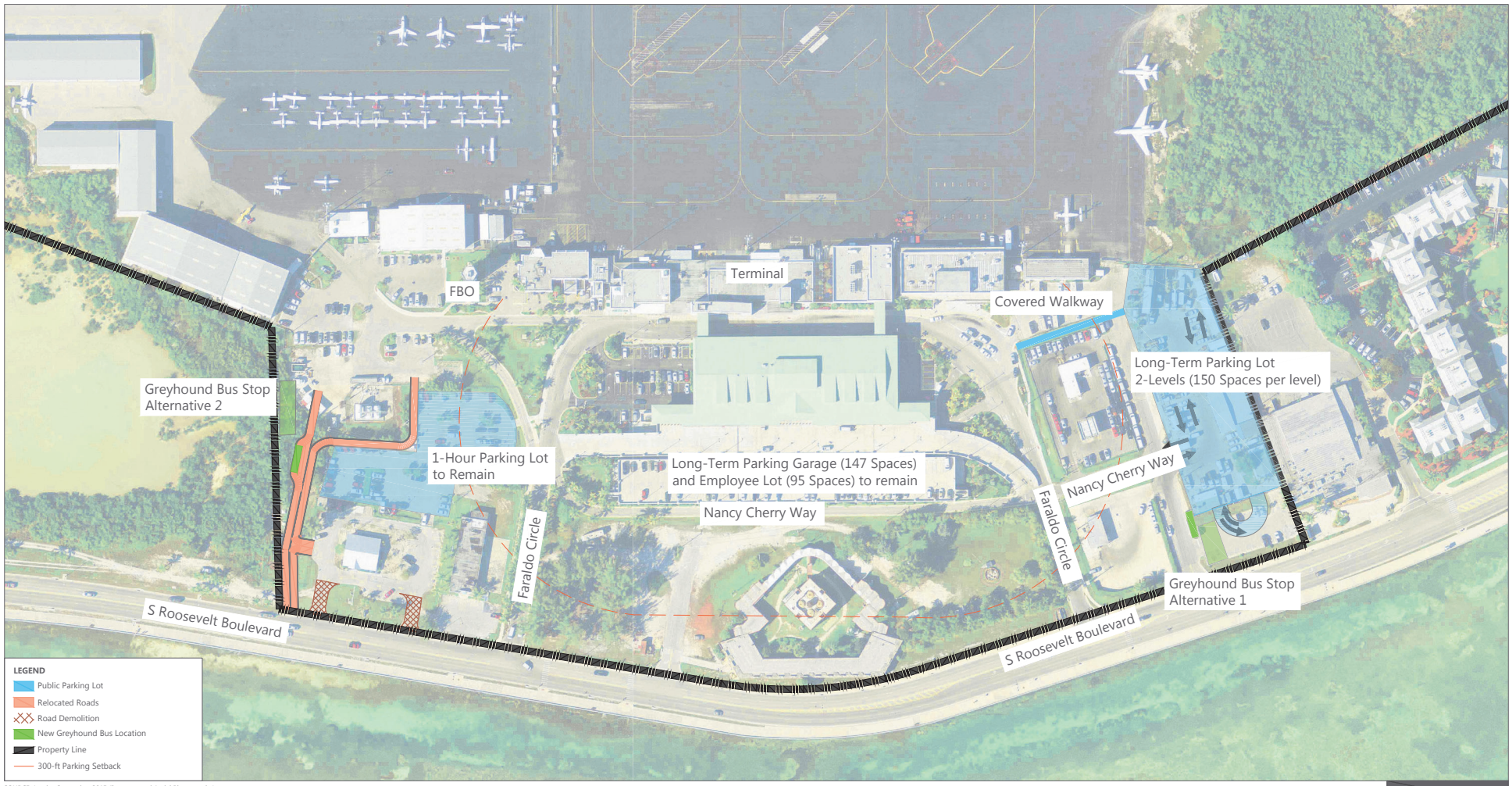
EXHIBIT 5.3-2

NORTH 0 0 ft

Drawing: P:\Monroe County FL\Task 200 - EYW Master Plan\206 - Alternatives\CAD\Landside 2035 Curb\EYW-Landside_Alts_v7(2035 Curb).dwg Layout: Ex_5.3-2 Plotted: May 19, 2017, 09:44AM

2035 Arrivals Curb

[PRELIMINARY DRAFT- FOR DISCUSSION PURPOSES ONLY - NOT FOR DISTRIBUTION]



SOURCE: Jacobs, September 2015 (Basemap and Aerial Photography).
PREPARED BY: Ricondo & Associates, Inc., October 2016.

EXHIBIT 6.4-1

NORTH 0 200 ft

Drawing: N:\EYW\Master Plan\04-Working\02-Landside\CAD\EYW-Landside_Alts_v7(2025 Curb).dwgLayout: Ex_6.4-1 Plotted: Nov 7, 2016, 10:23AM

Parking / Airport Access Alternative



Section 4

GENERAL AVIATION

General Aviation

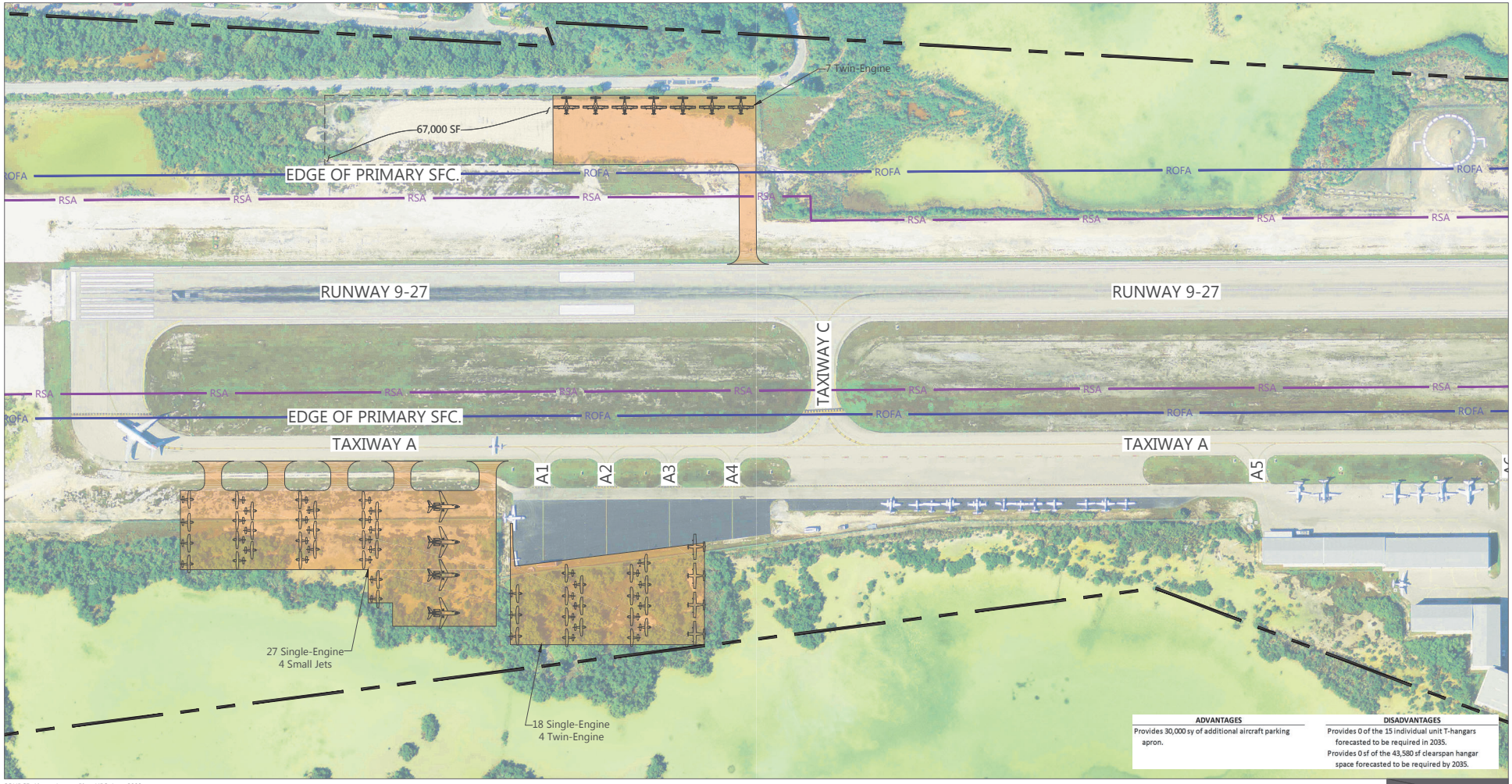
1. **Alternatives Considerations**:

- Individual t-hangars meet current demand – 15 additional units required by 2035
- Conventional hangars deficient today – requires an additional 43,580 sf by 2035
- FBO Terminal deficient today – requires an additional 3,750 sf by 2035
- General Aviation (GA) expansion opportunities
  - Ramp expansion South of Runway 9
  - North of Runway 9-27 on Airport-owned property

2. **Master Plan Objectives**:

- Provide additional aircraft storage facilities, including ramp and larger t-hangars
- Develop options to expand the East and West overflow ramp areas

[Preliminary Draft for Discussion Purposes Only]



ADVANTAGES	DISADVANTAGES
Provides 30,000 sy of additional aircraft parking apron.	Provides 0 of the 15 individual unit T-hangars forecasted to be required in 2035. Provides 0 sf of the 43,580 sf clearspan hangar space forecasted to be required by 2035.

SOURCE: Airport Layout Plan, URS, June 2003.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

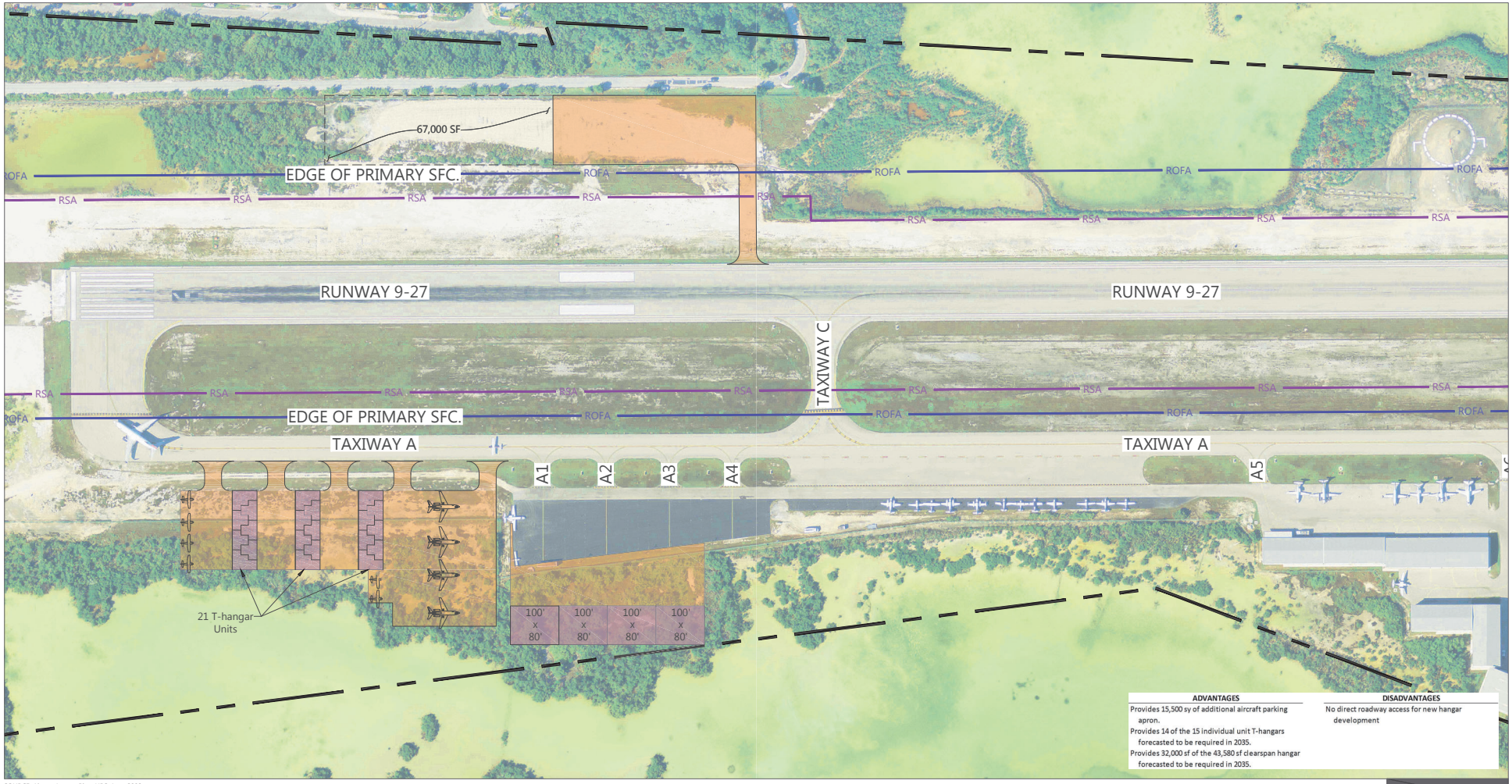
EXHIBIT 5-1

NORTH 0 00 ft.

Concept 1A - Short-Term Development
Assumes Approval of MOS & 1 Mile Visibility Minima

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\214- Supplemental Tasks\Airfield Geometry Assessment\CAD\GENERAL AVIATION ALTS 500 FT PRIMARY.dwg Layout: 1A 11x17 Plotted: May 18, 2017, 04:37PM

[Preliminary Draft for Discussion Purposes Only]



SOURCE: Airport Layout Plan, URS, June 2003.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

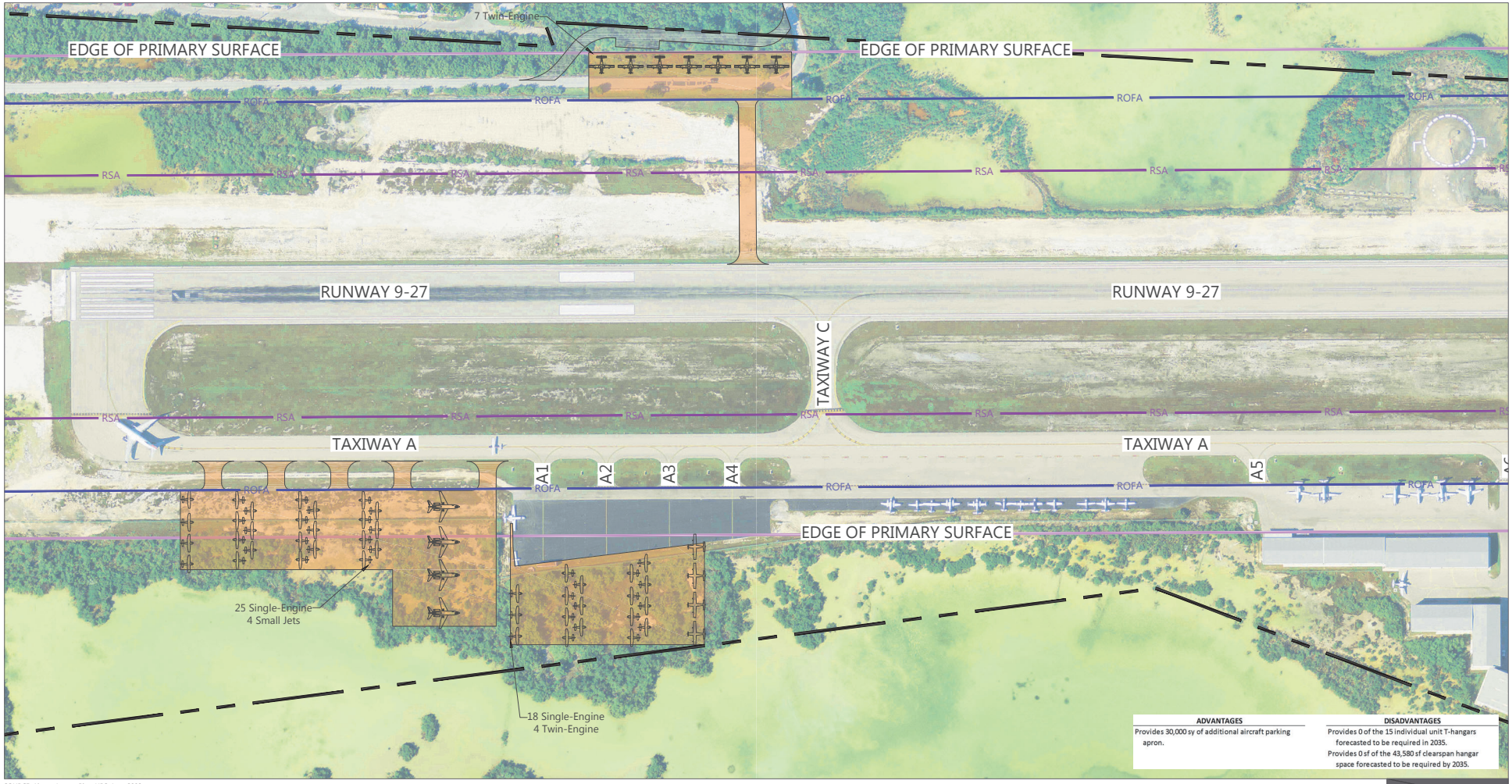
EXHIBIT 5-2

NORTH 0 00 ft.

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\214- Supplemental Tasks\Airfield Geometry Assessment\CAD\GENERAL AVIATION ALTS 500 FT PRIMARY.dwg Layout: 1B 11x17 Plotted: May 18, 2017, 04:37PM

Concept 1B - Long-Term Development
Assumes Approval of MOS & 1 Mile Visibility Minima

[Preliminary Draft for Discussion Purposes Only]



SOURCE: Airport Layout Plan, URS, June 2003.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

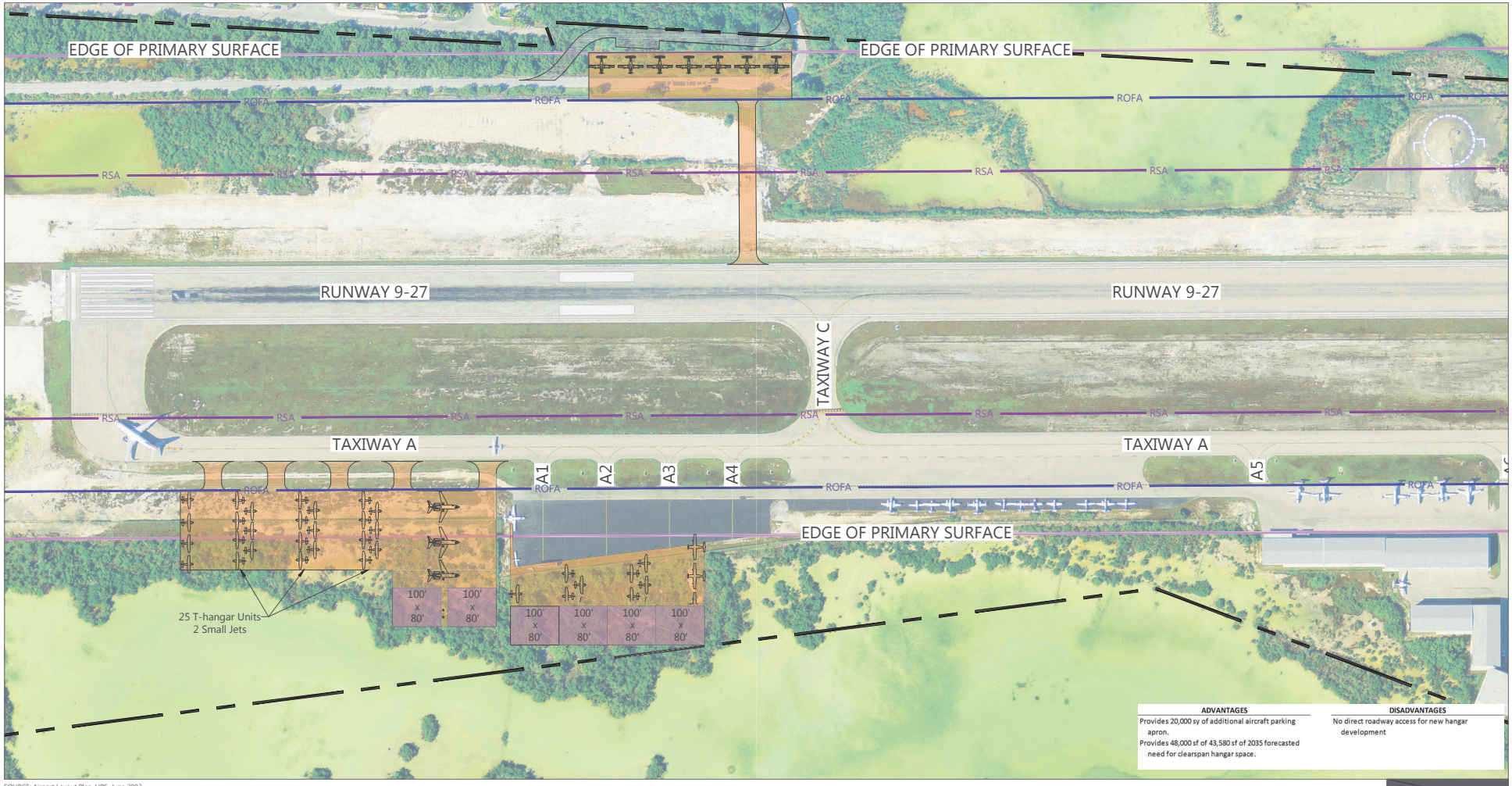
EXHIBIT 5-3

NORTH 0 □00 ft.

Concept 2A - Short-Term Development
Assumes Fully Compliant RSA, ROFA, and 3/4 Mile Viability Minima

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\214- Supplemental Tasks\Airfield Geometry Assessment\CAD\GENERAL AVIATION ALT 1K FT PRIMARY.dwgLayout: 2A 11x17 Plotted: May 18, 2017, 04:35PM

[Preliminary Draft for Discussion Purposes Only]



SOURCE: Airport Layout Plan, URS, June 2003.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

EXHIBIT 5-4

NORTH 0 □00 ft.

Concept 2B -Long-Term Development
Assumes Fully Compliant RSA, ROFA, and 3/4 Mile Viability Minima

Drawing: M:\Monroe County\Task 200 - EYW Master Plan\214- Supplemental Tasks\Airfield Geometry Assessment\CAD\GENERAL AVIATION ALT 1K FT PRIMARY.dwgLayout: 2B 11x17 Plotted: May 18, 2017, 04:36PM

Next Steps

- Submit Alternatives Analysis Chapter
- Refine Capital Improvement Program (CIP)
- Develop financial analysis and implementation plan
- Complete environmental review for the preferred development plan
- Finalize Airport Layout Plan (ALP) drawing set

PREPARED BY

RICONDO®

In association with:

American Infrastructure Development, Inc.
Deborah Murphy Lagos & Associates, LLC.
Jacobs Engineering Group Inc.
McFarland-Johnson, Inc.